GAS JOURNAL

Vol. 258 **April 13, 1949** **No. 4480**

GAS RESEARCH

RESEARCH is a misunderstood subject. Comparatively few men who rise to the higher administrative and executive positions in industry have had experience of undertaking research into a scientific subject with their own hands and brains. But many appear to believe themselves competent to guide the general policy of a research organisation, and some research men are themselves unfitted to direct an organisation of wide scope, since their outlook tends to be limited to the field that is beneath their feet at any one time. Thus, in the years that have passed there has been the spectacle of gas engineers urging the Gas Research Board to undertake work of immediate practical consequence; while at the same time, those whose interests lie in academic knowledge have with equal insistence urged that more attention should be devoted to fundamental researches.

The happy mean lies between these extremes and the gas industry must be regarded as fortunate in that those who are directing the work of the Gas Research Board have taken a middle course. Dr. King in his monochrome and unvarnished recital of the year's work made his hearers fully aware that while some of the investigations under his charge would have immediate practical application in the gasworks, others, particularly that concerned with combustion research, might not be translated into any form of practice for many years to come. In any research establishment there must always be a reasonable, and even a high, proportion of fundamental work in progress; the Board seems to have pleased everyone—and in that has performed no small feat.

Not only is research a misunderstood subject, but it is a word whose meaning is not clear to the average individual. Every minor enquiry is not a 'research.' Once that fact is understood, it is easier to realise that most of the difficulties that arise on a works should be capable of solution by the works staff. Thus, in fact, there are few 'practical' difficulties that are fit and proper subjects for research. The true function of a Research Association—which the Gas Research Board is—is to investigate problems that cannot well be undertaken by the normal works staff who are engaged in maintaining a supply of gas. Thus it comes to pass that most of the work undertaken by the Gas Research Board must be of the longer-term type. Among these are total gasification and the application of the fluidisation technique to gas manufacture.

These two problems have been approached from rather different angles. The one was initiated in an attempt to adapt an existing (German) process to practical ends in this country and with British coals; the other is an attempt to use a new (American) technique for existing purposes. Whether or not total gasification of coal in a stream of oxygen and steam will prove a practical method of making gas at an economic cost, it is necessary that the whole process should be thoroughly investigated. In research, one never knows when a plum may be found, or even when a piece of purely negative information may prove of value. It is equally important that the possible adaptation of fluidisation to gas manufacture should be investigated. This technique has proved so valuable in the oil industry and the chemical industry that it may be applicable in the gas industry. The difficulties are considerable, and arise largely because the size of the particles diminishes as the reaction proceeds, while it is necessary for the reactions between solid and gas to proceed to completion. The ease with which solids can be handled as if they were liquids, the precise control that is afforded over temperature, and the success that has been achieved in other fields lure us on like a will-o'-the-wisp—but perhaps with more fortunate results. Heartening news has come from Leeds in that the investigations described at the autumn research meeting of the Institution upon the application of this technique to the removal of hydrogen sulphide from gas by iron oxide have met with no small degree of success since they were described in November.

We may confess to a feeling that the tempo of research and development in the gas industry is far too leisurely. The work of the Gas Research Board has been hampered by the absence of a home of its own. Now that it has been fully established at Beckenham and it is no longer necessary to farm so much work out, we anticipate more rapid results. Our criticism, however, is not directed against the work of the Board. It is a criticism of the gas industry as a whole. The time between getting an idea and putting it into practice is far longer than it need be—far longer than is necessary in other countries. Why has not the industry taken up the removal of organic sulphur compounds? The Gas Light and Coke Company has shown that it can be done, and at what cost it can be done. The South Metropolitan Gas Company years before blazed the trail, though using different methods. Mirfield has a plant working on yet another system. But for some reason the gas industry lags behind in development. We are slowly and painfully plodding along at the heels of the United States in the field of fluidisation. They have had ten years start of us. They kept their processes secret during the war for obvious reasons. But all this time they were gaining experience, making mistakes no doubt, but making advances as the result of both. Why do we need to start all over again? Is it a form of scientific pride that will not let us accept the work of others? Why, as Professor Riley suggested, should we not buy designs from America and put up a plant on a reasonable works scale? The Gas Research Board, no doubt, has no funds for that purpose. The nationalised gas industry, if it believes in the work of the Board, can provide those funds, and possibly speed up development by as much as ten years.

Another piece of research that is well worth trying is that of blast pre-heating and methane synthesis in a water-gas generator. This again is the sort of investigation that is likely to be of interest to the whole industry and can be best undertaken by a research team with no other objective or distractions. The idea of pre-heating the blast used in gasification processes has long been attractive. Attractive ideas, however, have a way of becoming less attractive when examined in detail. In this, as in so much of the Board's

work, there is a background of collaboration with others in the industry. It is very important that the Board should be kept in close touch with 'working' members of the industry it serves. As in the research into the hardening of oxide, this has been done through the help which chemists and engineers all over the country have given to the Board's investigators. In the total gasification and water-gas investigations this help is being given by contractors, members of the Society of British Gas Industries. Whatever may be the future set-up of research within the industry, it is of the first importance that this form of contact should not be lost.

MIDLAND OPPORTUNITIES

UNCERTAINTY which has clouded the deliberations of some of the long-founded associations in the industry is beginning to clear. The functions of the Junior Associations and the Salesmen's Circles are intimately bound up with the education and, eventually, the promotion of their members. If the structure of these bodies should be altered, it might well result in the loss of a valuable medium whereby the younger entrants to the industry could mix freely with their superiors and profit by their opinions, and where in time these same men, richer by experience and instruction, could show their mettle in open debate. In the past two issues of the *Journal*, the future of the industry's social and educational associations has been considered in some detail and the views of two Area Board Chairmen reported. It is now possible further to fill in details of the picture by revealing something of Mr. G. le B. Diamond's plans for the West Midlands Gas Board, of which he is Chairman. Mr. Diamond and the Deputy Chairman, Mr. G. A. Mathews, were two of the principal guests at the lunch given at Birmingham on April 7 to celebrate Mr. C. L. Evans's Presidency of the Midland Junior Gas Association. His remarks were a source of encouragement for many who had viewed the future with anxiety, and his obvious appreciation of the educational value of the Association did much to assure members that their case will receive sympathetic treatment. Admitting that he had himself never been a member of the Midland Juniors, Mr. Diamond said that he had nevertheless given a great deal of attention to the training of young men in the industry and had thus observed the high quality of many of the Juniors' papers. There were many posts to be filled, and the Board was making enquiries as to suitable applicants. "As far as possible,' said Mr. Diamond, 'these posts will be filled by candidates from the West Midlands area, and I have every reason to think that they will be as happy under the new organisation as the old. The field for promotion will be very wide.' Speaking specifically of the Association, Mr. Diamond promised that the West Midlands Gas Board would do everything possible to assist them to take part in visits and meetings so that a free and unfettered exchange of knowledge could take place.

The Board's task was to maintain an efficient supply and satisfy all reasonable demands for gas in the area. Mr. Diamond referred to those terms of reference as 'very wide but very definite,' and pointed out that it was not yet possible to foresee the type of appointments young men could hope to obtain; however, it could be stated with confidence that there would be a large measure of specialisation. The engineer and manager would be replaced by specialists in each sphere. In many ways, he admitted, this was a pity as holders of this office had made fine contributions to the industry. It was the duty of each Area Board to make provision for advancing the skill of its employees and providing the necessary facilities for training and education. In the past recruiting had been carried on in a haphazard fashion and there had been all too few additions to the industry's personnel. There was now evidence of an extreme shortage of really good men due, to some extent, to the 1914-1918 war. Mr. Diamond remarked, 'You have only to look round at the seniors and see how many are in their late 50's and 60's to see the opportunities coming to you in a few short years.' 'We know,' he said, 'that you will work with us to make a splendid success of nationalisation.'

COKE COMPLAINTS

FOUR groups of people are concerned with coke complaints—the producers, the distributors, the appliance manufacturers, and the consumers. The first two, so far as the southern counties are concerned, have formed the very enthusiastic London and Counties Coke Sales Circle, which has started well by hearing a discussion on a paper by Mr. G. H. Fuidge, Chief Physicist of the South Metropolitan Gas Company, on 'Experiences in Dealing with Coke Complaints,' of which we hope to publish a report in the *Journal* next week. The appliance makers are doing their best, and the consumers are complaining at the rate of about six per 1,000 deliveries—a much lower proportion than before the war, when gasworks were able to choose their own coals with much lower ash contents than at present. It may be characteristic of the British housewife to put up with more and complain less than in pre-war days, but so long as there are even six complaints per 1,000 deliveries it is well that coke salesmen should get together and compare notes. Experience has shown that many of the complaints of unsatisfactory performance of coke are due to faults in the appliances, the installation, or in the methods of use, and that only a small proportion are directly attributable to poor quality of coke. On the other hand it would be wrong to let the distributors think that the producers are not conscious that improvements in coke quality are needed.

The subject has received the urgent attention of the London and Counties Coke Association's Technical Committee since the war, and a comprehensive specification for the quality of coke for domestic purposes has been drawn up and circulated to all producers. Within the limits of present difficult circumstances of labour and supply of plant, every endeavour is being made to work to that specification. The whole subject of the preparation of coke for the market is also being actively studied by the Technical Committee. Moreover, the L.C.C.A. and the larger coke producers have technical staffs who are always available to give advice on problems connected with coke utilisation. An advantage which the new Coke Sales Circle offers over the separate producers' and distributors' salesmen's circles of pre-war days is that the two sides can talk over their problems together; although appliance makers are not at present catered for so far as membership is concerned there seems no reason why they should not be called into consultation whenever occasion requires.

THE BUDGET

The absence of any purchase tax relief in the Budget will have come as a severe blow to the manufacturers of gas appliances and to salesmen in the industry alike. It is indeed difficult to reconcile the Chancellor of the Exchequer's apparent inflexibility with the expressed intentions of the Government in such matters as fuel economy, increased cleanliness in factories and the catering industry, and recruitment of women into industry. Commenting on the Budget statement, Mr. J. R. W. Alexander, General Manager of the British Gas Council, said: 'The provision of hot water and warmth is a social service, which is not maintained by purchase tax on gas appliances. The installation of taxed fuel-saving appliances will continue to fall, particularly of water heaters and space heaters, the makers of which will be faced with a serious position and their workers with unemployment. Alcohol has been preferred to cleanliness. The lower income groups will be particularly penalised. The retention of the tax at its present excessive rates will result in a lower yield. It has not been recognised that the tax should be removed or reduced in order to lower the consumption of fuel by encouraging the installation of apparatus designed to give maximum efficiency and economy.'

Personal

Mr. J. W. PLOWMAN, Sales Manager of Dewrance & Co., Ltd., has been appointed General Manager of the Company's Dumbarton works. Mr. B. S. BASS, Assistant Sales Manager, has been appointed Sales Manager.

* * *

Mr. A. H. WATERFIELD, a Principal Scientific Officer, formerly of the Ministry of Supply, has been appointed by the Department of Scientific and Industrial Research for scientific liaison duties in France, with the rank of Attaché at H.M. Embassy in Paris.

* * *

Mr. and Mrs. J. F. TYNDELL celebrated their golden wedding at their home in Deal on April 5. Until his retirement in 1940, Mr. Tyndell was Engineer and Manager of the Deal and Walmer Gas Company. Mr. FREDERICK TYNDELL, Assistant Engineer and Manager of the Hong Kong and China Gas Company, arrived home by air in time for the celebrations, and will remain in England for six months before returning to Hong Kong.

* * *

The Chairman and Directors of Associated Gas and Water Undertakings, Limited, gave a dinner and dance at the May Fair Hotel on Tuesday, April 5. Primarily the object was to thank the officers of the subsidiary companies and the local Directors for their enterprise and devotion to duty. Well over 200 guests were received by Mr. and Mrs. W. H. BENNETT. They included Colonel and Mrs. Harold Smith, Mr. and Mrs. O. R. Guard, Mr. and Mrs. W. K. Hutchison, Colonel and Mrs. C. M. Croft, Lady Goodenough and Mrs. C. Valon Bennett. Speeches were not the order of the occasion, but it was recalled that on May 1 Mr. W. H. Bennett would complete a link in a chain which represented 130 years' connection with the gas industry and that his grandfather was Engineer of the London Gas Company 102 years ago. Colonel SMITH, on behalf of all the guests, thanked their hosts and the Chairman; and in reply Mr. Bennett expressed the hope that those of the family which was now breaking up would be as comfortable under the new regime as at present. In any case he was confident that the Chairmen of the Area Boards would have the support of all gas men. Mr. R. S. FALKNER, for the younger members of Associated Gas, spoke of the great family of officers whose first thought under private enterprise had been service to the public and loyalty to their superiors.

Appointments

The Gas Council announces the following appointments:—

Mr. WILFRID BAILEY, A.S.A.A., F.I.M.T.A., to be Chief Accountant of the Gas Council. Mr. Bailey, who is 39 years of age, is at present Chief Finance Officer of the Crawley Development Corporation. His previous appointments have included those of Deputy Borough Treasurer of Wednesbury, Pontypridd, and Willesden, and Borough Treasurer of Bexley.

Mr. C. JOHNSON, Newcastle Representative of the South Metropolitan Gas Company, to be Coal Officer of the Gas Council.

Mr. J. O. COOKE, General Manager of the London and Counties Coke Association, to be Coke Officer of the Council.

Miss C. A. WOOSTER, M.B.E., General Secretary of the London and Counties Coke Association, to be Secretary to the Coke Committee of the Council.

Mr. T. B. SCOTT, Secretary of the British Gas Council, to be an Assistant Secretary (Administration).

East Midlands Gas Board

The East Midlands Gas Board has made the following appointments:—

Divisional General Managers: Sheffield and Rotherham: E. H. HARMAN (General Manager, Commercial Gas Company); Notts. and Derby: B. A. MALLENDER (Managing Director, Derby Gas Light and Coke Company); Leicester and Northants: K. L. PEARCE (Engineer and Manager, City of Leicester Gas Department).

Sub-Divisional Managers: Rotherham: E. B. FIELD (Engineer and General Manager, Rotherham Gas Department); North Lincolnshire: Colonel J. KENNINGTON (Engineer and Manager, Great Grimsby Gas Company); Lincoln: J. S. MARSHALL (Deputy Engineer and Manager, Lincoln Gas Department); South Lincolnshire: B. CLARKE (Engineer, Manager and Secretary, Stamford and St. Martin's Gas Light & Coke Company).

Industrial Relations Officer: F. L. FFOULKES (London District Secretary, Federation of Gas Employers, and British Gas Council).

Acting Divisional Accountant: Lincolnshire: W. R. SMOUT (Accountant, Great Grimsby Gas Company).

Appointments of further Sub-Divisional Managers will be made shortly.

Eastern Gas Board

Mr. T. C. BATTERSBY, M.I.MECH.E., M.INST.GAS E., General Manager and Chief Engineer of the Watford and St. Albans Gas Company, has been appointed Divisional General Manager of the Watford and St. Albans Division of the Eastern Gas Board.

The Eastern Gas Board has appointed Mr. F. W. MORRIS, F.C.A., as a part-time member of the Board. Mr. Morris is a Director and Joint Manager of F. Lambert & Son, Ltd., Norwich, Yarmouth and Ipswich, tea blenders and wholesale and retail tea and tobacco merchants, and a Director of Briton Brush Company, Ltd., Wymondham, Norfolk, and Fletcher & Son, Ltd., printers, Norwich. He is also Chairman of the General Commissioners of Taxes, Norwich City Division, and a Board's representative on the Assistance Board's local appeal tribunal.

North Western Gas Board

The North Western Gas Board has made the following appointments:—

Chief Technical Officer.—Mr. W. HODKINSON, M.INST.GAS E. (Technical Director and General Manager of the United Kingdom Gas Corporation, Ltd.).

Secretary.—Mr. S. G. DEAVIN, A.S.A.A., Secretary and Accountant of the Preston Gas Company and of the Longridge Gas Company.

Accountant.—Mr. PERCY KNOWLES, Accountant to the United Kingdom Gas Corporation, Ltd., and Secretary and Accountant of the West Yorkshire Gas Distribution Company.

Public Services Officer.—Mr. WALKER SMYLLIE, B.A., Director and Manager of Doremus & Company, Ltd., and consultant to the United Kingdom Gas Corporation, Ltd., and other gas groups.

Assistant Secretary.—Mr. COLIN W. SMETTEM, Solicitor, Assistant Town Clerk to the County Borough of Wallasey.

South Western Gas Board

The South Western Gas Board has made the following District appointments. In the list given below the present positions are shown in brackets in each case.

P. J. WHITEHEAD (Acting Engineer, Swindon), Production and Distribution Engineer, Swindon.

H. WHEELER (Acting Secretary, Swindon), Accountant, Swindon.

C. H. GILBERT (Sales Advertisement Officer, Swindon), Commercial Assistant, Swindon.

M. R. WEBB (Commercial Assistant, Cheltenham), Commercial Assistant, Cheltenham.

W. R. DIBBLE (Secretary, Barnstaple), Accountant, North Devon.

H. BEACHAM (Commercial Assistant, Weston-super-Mare), Secretary and Commercial Assistant, Weston-super-Mare.

A. E. BULLEN (Deputy Engineer, Plymouth & Stonehouse), Production Engineer, Plymouth and North Cornwall.

S. VERNON (Accountant, Cheltenham), Accountant, Cheltenham.

C. L. TAYLOR (Engineer, Manager and Secretary, Cheltenham), Station Engineer, Cheltenham Gasworks.

G. C. GUNSTON (Mains Superintendent, Bristol), Mains Superintendent, Bristol.

L. H. SAMBOURNE (Assistant Accountant and Registrar, Bristol), Accountant, Bristol.

O. H. W. BOONHAM (Chief Chemist and Chemical Engineer, Severn Valley Gas Corporation), Production Engineer, Cheltenham.

A. P. JENNINGS (Deputy Engineer, Plymouth Gas Department), Station Engineer, Plymouth and Devonport.

H. J. BOARD (Secretary and Commercial Manager, Plymouth & Stonehouse Company), Accountant and Commercial Assistant, Plymouth and North Cornwall.

A. R. LANGFORD, M.B.E. (Distribution Superintendent, Plymouth and Stonehouse Company), Distribution Engineer, Plymouth and North Cornwall.

W. FREER (Sales and Services Supt., Exeter), Commercial Assistant, Exeter.

J. H. CORNISH (JUNIOR) (General Manager and Engineer, Bridgwater), Production Engineer, Taunton.

W. J. IMBRIE (Engineer and Manager, Yeovil), Commercial Assistant, Taunton.

H. WADSWORTH (Distribution Engineer, Bath), Distribution Engineer, Bath.

W. E. BAGGS (Commercial Assistant, Bath), Commercial Assistant, Bath.

S. G. ASH (Secretary, Exeter), Accountant, Exeter.

A. G. HOLTAM (Distribution Engineer and Manager, Cheltenham), Distribution Engineer, Cheltenham.

J. E. WILKES (Senior Executive Officer, South Western Electricity Board), Production Engineer, Torquay.

O. PINCOCK (Distribution Superintendent, Weston-super-Mare), Distribution Engineer, Weston-super-Mare.

K. G. BODILEY (Works Superintendent, Weston-super-Mare), Production Engineer, Weston-super-Mare.

A. L. NICHOLLS (Chief Clerk, Weston-super-Mare), Accountant, Weston-super-Mare.

A. C. RAE (Assistant Engineer and Manager, Bath), Production Engineer, Bath.

J. HOLTBY (Secretary, Bath), Accountant, Bath.

A. B. HORSFIELD (Fittings Superintendent, Bristol), Fittings Superintendent, Bristol.

T. W. CLAPHAM (Assistant Engineer and Works Manager, Bristol), Production Engineer, Bristol.
C. R. WINTER (Distribution Superintendent, Plymouth Gas Department), Distribution Engineer, South Cornwall.
T. L. TALLENTIRE (Engineer, General Manager and Secretary, Falmouth), Production Engineer, South Cornwall.
I. F. GRIX (Accountant, St. Austell), Accountant, South Cornwall.
E. A. HAYNES (Commercial Assistant, Torquay and Paignton), Commercial Assistant, Torquay.
K. G. PEMBERTON (Chief Engineer, Devon Gas Association), Distribution Engineer, Torquay.
G. A. BOWERS (Secretary, Exeter), Accountant, Torquay.
F. W. SANSOM, M.B.E. (Mains Engineer, Exeter), Distribution Engineer, Exeter.
J. W. DEAN (Engineer and Manager, Exmouth), Production Engineer, Exeter.
S. B. JONES (Engineer and Manager, Minehead), Production and Distribution Engineer, North Devon.
F. G. CRAXFORD (Distribution Manager, Taunton), Distribution Engineer, Taunton.
C. V. TILNEY (Secretary and Accountant, Taunton), Accountant, Taunton.

The following Divisional appointments have also been made:—
H. GAY (Secretary and Commercial Assistant, Bristol), Deputy Accountant, Northern Division.
G. SHERLOCK (Accountant, Torquay and Paignton), Accountant, Southern Division.

Wales Gas Board

MR. WILLIAM THOMAS HIRD, M.INST.GAS E., has been appointed Distribution Engineer to the Wales Gas Board. Mr. Hird, who is 42 years of age and now holds the position of Distribution Superintendent to the Sheffield and District Gas Company, was educated at Bristol Grammar School and received his training in gas distribution with the Bristol Gas Company. In 1932 he was appointed Distribution Superintendent at Birkenhead and in 1941 Assistant Distribution Superintendent at Sheffield, being promoted to his present position in 1946. Mr. Hird has specialised in large scale bulk transmission and distribution of gas. At Sheffield the distribution system covers 1,400 miles of mains of diameters up to 48 in. He is a Member of the Pipes Committee of the Institution of Gas Engineers and is on the Institution's Board of Examiners. He is also a Member of the Yorkshire District Gas Education Committee and of the Joint Education Committee of the Ministry of Fuel and Power and the Institute of Fuel (Yorkshire District).

Diary

April 22.—**London and Southern Junior Gas Association:** Reception and Dance.
April 22.—**London and Counties Coke Association:** Finance Committee, 10.45 a.m.; Executive Committee, 11.30 a.m.; Central Committee, 12 noon. Grosvenor House, Park Lane, W.1.
April 22.—**Institution of Chemical Engineers:** Annual Corporate Meeting, May Fair Hotel, Berkeley Street, W.1.
April 22.—**Manchester District Association of Gas Engineers:** Annual Meeting and Luncheon, Grand Hotel, Manchester.
April 23.—**Manchester District Junior Association of Gas Engineers:** 'The Juniors and the Press,' Norman Smith. Engineers' Club, Manchester.
April 23.—**London and Southern Junior Gas Association:** Visit to Ponders End Works of the Tottenham and District Gas Company.
April 26-29.—**Women's Gas Council:** 'Home and Citizenship' Conference. Hydro Hotel, Harrogate.
April 26.—**Southern Association of Gas Engineers and Managers (Eastern District):** 'The Selection and Design of Gas Condensing Plant,' K. W. Francombe and A. G. Grant. Gas Industry House, 2.30 p.m.
April 26.—**Midland Junior Gas Association:** Annual General Meeting.
April 27.—**B.G.C.** Domestic Development Committee: Gas Industry House, 2.30 p.m.
April 28.—**Institute of Fuel:** Annual Luncheon, Connaught Rooms, London, 1 p.m.
May 6.—**North of England Gas Managers' Association:** Annual General Meeting, Newcastle-on-Tyne. 'Sulphur Removal,' Dr. L. A. Moignard, M.A., D.PHIL., A.R.I.C. (Gas Research Board).

When Ossett Town Council approved on Mar. 30 a rate of 18s. 3d., a reduction of 3d., Mr. A. Clark, Finance Committee Chairman, mentioned that the nationalisation of Ossett's gas undertaking would mean a loss of income to the Corporation from establishment charges of £2,275, equivalent to an 8d. rate.

News in Brief

The Trade Statistics for January, 1949, just issued by the Department of Industry and Commerce in Eire, show imports of 15,039 tons of gas coal, valued at £75,312, as against 14,161 tons, valued at £54,135 in January, 1948.

The Ministry of Fuel and Power has approved Kirkcaldy Town Council's application for permission to erect a new gasworks at Skeddoway, near Thornton. A Bill granting the Council authority to proceed was presented to Parliament a few days ago.

A Coke Oven Gasholder, costing £75,000, with a capacity of 3 mill. cu.ft., is nearing completion at Workington, Cumberland. It will be used to store the surplus gas from Workington Ironworks. The contractors are R. & J. Dempster, Ltd., of Manchester.

To Assist Penryn Gas Company to effect urgent works repairs, a temporary gas line was run overground from the Falmouth Gas Company's distribution system to the Penryn works, and supplies of gas became available on Mar. 31. A permanent link-up has already been approved, but the start of work on this is held up by shortage of materials.

The Annual General Meeting of the Fire Protection Association was held in London on April 6, when the Chairman, Sir Arthur Morgan, F.C.I.I., announced his resignation for health reasons. At a Council Meeting later, Mr. J. W. J. Levien, previously Deputy Chairman, was appointed to succeed Sir Arthur as Chairman, and Mr. Thomas Wallas was appointed Deputy Chairman.

The Power-Gas Corporation, Ltd., of Stockton-on-Tees, has endowed an open scholarship, tenable at Durham University, to enable suitably qualified students to undertake a course of study, leading to a degree, in either civil or mechanical engineering. The scholarship will normally be tenable for a period of three years but, in exceptional cases, it may be extended for a fourth year. In 1947, the Power-Gas Corporation endowed an open scholarship at the University of Leeds for gas, chemical, mechanical or civil engineering.

Berwick (Northumberland) Town Council has insisted on meeting representatives of the Berwick and Tweedmouth Gaslight Company to discuss proposed increases in gas charges. At a Council meeting a letter from the Company was read, which stated that the Company's Chairman had already met the Chairman of the Lighting Committee and showed increases in the price of coal and wages. It was felt that no further meeting was necessary. The Town Clerk pointed out that the Company was entitled to enforce payment, but the Council decided to seek another meeting before any increases were made.

Four Apprentices employed by Newton Chambers & Co., Ltd., have carried out the complete job of re-sheeting a gasholder at Rotherham. The holder, a small one of about 20,000 cu.ft. capacity, is at the coke oven plant of John Brown & Co., Ltd., of Canklow, which now operates under the control of the National Coal Board. The four boys who carried out this feat worked under the supervision of their foreman and were: Fred Holden and Peter Day, two 18-year-old former pupils of Ecclesfield Grammar School, Kenneth Smart, aged 16, and Wilfred Williams (19), who assisted in the later stages.

The 'Brighter Homes' Exhibition, held in Manchester last month, included a Manchester and District Joint Gas Exhibit in which 11 local gas undertakings were represented. The most outstanding exhibits at the stand, which attracted considerable interest, were the Maxol hot water display unit, featuring the Maxol circulator and Maxol S1 and S2 sink heaters; the kitchen unit, comprising Wallis cabinets with built-in refrigerator and multipoint and sink hot water appliances; and the Bratt Colbran display of space heating. The stand was organised by a Committee of four—Messrs. H. C. Jackson (Stretford), S. H. Packer (Manchester), J. Rennie (Oldham), and J. W. Rodgers (U.K. Corporation).

On March 18 the Tees-Side Branch of the Purchasing Officers' Association entertained Members of Council of the Association at dinner at the Corporation Hotel, Middlesbrough. The Branch chairman, Mr. H. H. Gale, of Ashmore, Benson, Pease & Co., Ltd., presided. The toast of 'The Association' was proposed by Mr. John G. Wrightson, a Director of Head, Wrightson & Co., Ltd., who said that his Company placed great value on the work of its purchasing department. Ten years of sellers' markets had produced an entirely new conception of purchasing and had brought about a general recognition of the important place which the purchasing officer held in management. Mr. Wrightson expressed the view that modern business had been built up by teamwork, and urged that the purchasing officer should work particularly closely with the planning and progress departments and with the laboratory. The toast of 'The Council' was proposed by Mr. M. W. Myers (Cargo Fleet Iron Co., Ltd.) and, in responding, the National Chairman (Mr. W. H. Napper, of the South Suburban Gas Company) reported on current Association activities.

Adams Beck's Maiden Voyage

The m.v. *Adams Beck* completed her maiden voyage from the North East coast on Mar. 24 when she berthed alongside the Gas Light and Coke Company's Fulham Works and unloaded her cargo of 2,600 tons of Durham coal.

The master of this new vessel, Captain R. W. Storey, was previously master of the Gas Light and Coke Company's s.s. *Fireglow*, and had commanded the s.s. *Mr. Therm* in the D-Day landings.

The upper photograph shows (left) Captain Storey and (right) Chief Engineer M. S. Blyth.

EFFICIENCY OF DOMESTIC HEATING

The efficiency of the heating systems in the experimental houses at Abbots Langley has now been determined. The figures are a further result of the research on house heating carried out by the Building Research Station, D.S.I.R., and give the total fuel consumption for one year as the input in therms and as the equivalent input of tons of coal. Details of the work are contained in a paper entitled 'The Efficiency of House Heating,' by Dr. J. C. Weston in the February, 1949, issue of the *Journal of the Institute of Fuel*.

The report provides a technical examination of the efficiency of the 19 different combinations of appliances installed in the houses, and also discusses the likely domestic load for district heating schemes. The paper is based on the same data as the first report on the economics of the heating systems in the houses. The data were obtained during the unoccupied period (winter, 1947-48) when there were no tenants in the houses and the laboratory staff carried out a routine related as near as possible to the habits of a family of four. Any future changes are unlikely to affect the broad picture.

For the purposes of the experiment the houses are divided into three groups: Partial heating (living room only), two stage heating (background heating with topping-up heating by radiant fires), and whole house heating.

The total fuel consumption for each system for an average year in the London region is given as input in therms and as the equivalent input in terms of coal, on the assumption of a production efficiency of 18% for electricity and 50% for gas. The annual consumption of fuel for water heating and cooking has been obtained from the average weekly consumption at Abbots Langley, since neither depend to any great extent on the outside climate. The consumption for space heating during an average winter was found from the experimental data related to weather conditions.

Houses in the partial group have a wide range of annual input from 950 therms in a house with an open coke fire and back boiler to 2,250 therms in a house with a solid fuel cooker and an open fire in the parlour. The corresponding amounts of raw coal used are 3½ to 7½ tons. The whole house heating group with an average input of 1,250 therms are satisfactory when the mean temperatures of the houses are considered. Here the equivalent amount of coal is about 4½ tons.

The two stage houses are somewhat penalised by having separate appliances for space and water heating, and the thermal input is higher than where both space and water are heated by one appliance.

Some of the partial houses have low consumptions and give reasonable house temperatures if the unheated bedrooms are acceptable. Because of the good insulation in the Abbots Langley houses these bedroom temperatures seldom fell below 50°F. In houses less well insulated the temperature would be much lower and the additional fireplaces and appliances usually installed in houses of this type before the war would be a necessity.

A broad picture of the efficiency of the various systems was obtained by assessing all the heat produced in the house and the heat lost by conduction through the walls and by ventilation. The figures were checked by measurements of the loss of heat up the flues and in the ash pits of the appliances. The whole house systems had an average efficiency of about 70%, the two stage about 60%, and the partial systems about 50%. In these houses all flues are inside the house and not on an outside wall. This data shows the importance of building in this way since with the flues on an outside wall the efficiencies would be 10 to 20% lower.

After 62 Years' Service with the Northampton Gaslight Company, Mr. John Colby has retired with a gift from the employees. The presentation was made by the Chairman, Alderman S. C. Adnitt, at a dinner and concert attended by over 300 employees. Long service certificates were presented to 21 employees with 25 years' service.

GAS IN FRANCE

(From Our Special Correspondent)

In the February issue of the 'Journal des Usines à Gaz,' Monsieur Veillon turns to the difficult problem of the æsthetic treatment of the coke storage and screening plant—le tours à coke. These structures, which generally consist of a tall set of bunkers, surmounted by screening and grading machinery usually enclosed in some sort of building, may attain a height of 80 to 100 ft. They cannot fail to be conspicuous features of the urban landscape. M. Veillon's article is in the form of brief notes illustrated by a comparatively large number of lively and informative freehand sketches. In fact these sketches are the body of his notes, giving examples of existing work followed by studies for future suggestion. First there are designs responding to technical necessities without any attempt at the æsthetic; these, he suggests, should not be repeated. For it appears that there is an architecture for this type of structure or at least a striving towards it. Among existing works he discerns three classes; the simple geometric (the nudist style); the geometric with panels differing in colour; the tower with balcony more or less developed and decorated, the balcony itself being a veritable ornament. His own designs are those of towers. In preparing schemes one may well hesitate, he says, between two extremes; the search of new forms, exaggerating, if necessary, the requirements of the problem, or an adherence to classical rules. But always the architecture of these structures must be conceived first in the light of good technical construction and choice of detail; the characteristic use of reinforced concrete, the treatment of stairways, platforms and their protection, covering harmonising with the main lines, lighting with special bricks and tiles which are easily incorporated with the concrete walls and which may assume great importance.

This problem, in spite of its very "particular" character, presents possibilities in architecture. It demands solutions satisfactory to urban amenities. Works hitherto achieved give an impression of search and trial. One would hesitate to say that any have achieved "creation." M. Veillon modestly claims nothing more than a contribution to the discussion, calling attention to the point.

Compressed Bottled Gas

Also in the February issue of the French *Journal* is a detailed study by M. A. Rignot of security provisions in compressor stations for the use of 'bottled' gas. Precautions against the formation of inflammable mixtures, against fire, against failure of bottles due to corrosion, physical weakness, etc., and against the gassing of personnel, are fully treated. The history of compressed gas is divided into four periods, 1855-1926, many experiments in Switzerland, England, France and Germany but with inadequate apparatus and without scientific basis, 1926-1940, methodical experiments pursued by gas undertakings in close collaboration with the Automobile Club de France and with metallurgists, 1940-1942, rapid development in the course of which in spite of strict regulations several hundreds of vehicles were equipped, 1942 to date, the industry is established, regulations are complete and good results are being obtained. The subject of material for the construction of the bottles is discussed. Steel is giving way to wound light alloys. In spite of failures one of the latter type is a success. The "Gerzat" bottle is stated to be the type for the future but unfortunately there is no description of it though one may infer that it is of light alloy, *i.e.*, aluminium and magnesium wound with steel wire.

The future of compressed gas is viewed with optimism. It is supported by the fortunate discovery of natural gas in the South-West. It is hoped that gas engineers, the petrol industry and the authorities will unite to maintain it at least in part. It rendered great services in the bad times from June 1940, which it is hoped will never recur.

Gas-Fired Furnaces

M. J. Moliné contributes a mathematical treatment of the subject of combustion efficiency in furnaces with several exits. An example is selected and it is shown that efficiency is adversely affected by blockages giving rise to pressure within the furnace resulting in escape of products of combustion by want of gas-tightness of the door and by inopportune opening of air inlets, etc. Draught should be regulated to give level gauge just below the floor of the furnace and all joints should be kept pointed and the door kept gas-tight when closed.

News

The Editor remarks that in the last few weeks gas has been much in the public mind in France. By a decree published on Jan. 18, the price of gas was blocked at a level equal to that authorised on Dec. 31, 1948. But in spite of that technicians continue to work for the amelioration of methods of exploitation and in search of the optimum equipment. Details of a very full programme of study and research are given.

Production has been widely treated in papers published in the last few years notably in those of M. Delsol on the use of petroleum oils and M. Papillon on the choice of type of retort bench, which is to be presented in abstract in June next in London at the Congress of the International Gas Union. This side of the industry is also engaging the attention of the Committee of the Association Technique de l'Industrie du Gaz en France since, with the collaboration of a particularly competent specialist, M. Blanc, the last touches are being put to a new edition, much extended and corrected, of the Cahier des Charges instituted in 1934 for the testing of refractory materials. Three other problems are also in hand; the treatment of gas with an important memoir by M. Bolzinger on physical purification, on which the Director of Research has solicited the advice of the Association Technique du Gaz, and a long study undertaken in common by MM. Delsol, Nerol and Papillon on the subject, already old but always new, of chemical purification; the production, distribution and utilisation of steam in the gasworks which is in the hands of MM. Boulangé and Tonnellier; and gas storage by M. Queret. Under the last heading everything connected with the gasholder, its construction, use and maintenance will be examined in detail. A new suggestion is that of the use of gas mains as reserve storage. Numerous questions relating to the application of gas in the domestic and industrial fields are also being dealt with in forthcoming papers and reports.

A FAREWELL VISIT

Members of Lanarkshire Gas Committee, accompanied by officials, paid, on April 1, their last formal visit before nationalisation to the gas undertaking as Uddingston. Included in the visiting party were Mr. Wm. Brownlie, County Clerk, and Mr. W. R. Watt, County Architect. They were accompanied on their tour by Mr. Fred R. Mitchell, Engineer and General Manager, Mr. Thomas Grieve, Deputy Manager, and Mr. Andrew Mitchell, Distribution Engineer. Each visitor was presented with an illustrated brochure tracing the history of the undertaking and showing plans for development. Mr. Mitchell said that in the early 1920's, when the County Council acquired the nine private companies manufacturing gas, the total sale of gas per year was just over 400 mill. cu.ft. Last year the undertaking at Uddingston, which is linked with the Cambuslang undertaking by high-pressure gas mains, sold 1,100 mill. cu.ft. of gas, and this year they expect to sell over 1,100 mill. cu.ft. When Stewarts and Lloyds extensions were completed, probably in 1953, they might require 3 mill. cu.ft. of gas each day. That quantity was equal to a very high proportion of the present daily output. Plans had been prepared, and were already in progress, for a large extension to the Uddingston works. A 2-mill. cu.ft. per day completely automatic carburetted water gas plant, incorporating waste-heat recovery, steam-raising plant, operating at 230 lb. per sq. in. pressure, was to be installed and should be completed at the end of the year. Already erected and in operation was a Holmes electrical detarrer, and ancillary plant—dry purifiers and wet purification plant for the first coal-gas stream of 7 mill. cu.ft. per day—was on order and would shortly be installed. In addition there would be an extra vertical retort carbonising plant. These additions would enable the daily output to be stepped up at Uddingston and Cambuslang to 10 mill. cu.ft. They were capable of easy extension, so that production could go even higher if demand made it necessary.

ASSOCIATION OF TAR DISTILLERS

At the recent Annual General Meeting of the Association of Tar Distillers, the following officers and executive committee were elected for the ensuing year:—*President:* Mr. C. Lord (Lancashire Tar Distillers, Ltd.). *Vice-President:* Capt. C. W. Harris (Burt, Boulton & Haywood, Ltd.). *Hon. Treasurer:* Capt. C. W. Harris (Burt, Boulton & Haywood, Ltd.). *Hon. Auditor:* Mr. E. Hardman (E. Hardman, Son & Co., Ltd.). *Executive Committee:* The President, Vice-President, Immediate Past-President and Honorary Treasurer, together with: W. McFarlane and T. A. Wilson (Scotland); A. E. Brown and C. Lord (N.W. Coast); J. Colligon and W. A. Walmsley (N.E. Coast); S. Billbrough, A. Bradbury and G. F. Peirson (North Midlands); W. H. Phillips and S. Robinson (South Midlands); S. Roberts and Major A. G. Saunders (London & S.E. Counties); H. H. Bates and Dr. T. H. Butler (South Western); Capt. C. W. Harriss and C. F. Sullivan (Wales); E. Hardman (Smaller distillers' representative); Commdr. C. Buist (Low temperature distillers' representative); C. F. Dutton (National Coal Board); and C. E. Carey, co-opted. The immediate Past-president is Mr. W. A. Walmsley of Thomas Ness, Ltd.

ANNUAL MEETING OF THE GAS RESEARCH BOARD

PROSPECTS FOR RESEARCH UNDER NATIONALISATION

THE Eighth Annual General Meeting of the Gas Research Board was held at the Institution of Mechanical Engineers, Storey's Gate, Westminster, on April 7, under the Chairmanship of Dr. H. Hollings, Chairman of the Council. The morning proceedings comprised the election of officers for the ensuing year, the presentation of the Tenth Annual Report of the Council of the Gas Research Board, the presentation and discussion of the report of the Director for the year 1948, and the presentation of a paper on 'The Synthesis of Methane from Carbon Monoxide and Hydrogen on a Nickel Catalyst,' by Dr. R. F. Strickland-Constable, M.A., D.PHIL.

The **Chairman** said that under the provisions of the Articles of Association of the Gas Research Board, the President, Viscount Falmouth, would retire at the close of the meeting unless he was re-elected. On behalf of the Council he wished to extend very warm thanks to Viscount Falmouth for the help which he had given them during the past year. His regular attendance at their meetings had been a very great encouragement to all those who had been working with the Gas Research Board, and it was with great personal pleasure that he was able to announce that he had agreed to remain in office for a further period. Having regard to the uncertainty of the present position, they were indeed fortunate and he had great pleasure in moving his re-election as President for the year 1949-50.

Dr. **H. Hartley** seconded the proposition, which was carried with acclamation.

Lord **Falmouth,** in acknowledgment, said it was an honour to have been asked again to be President of the Board. The work of the Gas Research Board was extremely important and they were going through a difficult time, and for those reasons he would do his best to render such assistance as he could.

Vice-Presidents

The **Chairman** proposed the election of Mr. C. H. Chester as Vice-President for the coming year. The proposition was based on the nomination of the Council of the Institution of Gas Engineers, of which body Mr. Chester was the Senior Vice-President. He felt it would be the wish of the meeting that in submitting the proposition he should express thanks to Mr. E. Crowther for having served them in a similar capacity for the past two years.

The proposition was warmly adopted and Mr. **Chester** briefly returned thanks.

The **Chairman** recalled that last year he told the meeting that Mr. D. M. Henshaw wished to retire from the position of Vice-President. He had remained in office for a further year, but his wishes should now be respected, and therefore, on the nomination of the Council of the Society of British Gas Industries, he proposed the election of the Earl of Limerick to succeed him. Mr. Henshaw had, he said, telegraphed his apologies for absence from the meeting.

Mr. **W. Dietrichs** seconded, and the proposition was approved.

The **Secretary** (Dr. W. T. K. Braunholtz) reported that one-third of the members of the Council were due to retire by rotation, comprising three nominees of the Institution of Gas Engineers, namely, Colonel W. M. Carr, Mr. J. E. Davis, and Dr. H. Hollings. The Institution had nominated the same three members for a further period of three years. Two representatives of the Society of British Gas Industries—Mr. A. G. Grant and Mr. A. Forshaw—were due to retire, and the Society had nominated Mr. H. S. Cheetham and Dr. Rees Jones to succeed them.

The **Chairman** said Mr. Grant and Mr. Forshaw could not be allowed to retire without an expression of thanks for their help in the past. Each of them had taken a very active part in the committee work of the Board. They would miss them but they understood the desire of the S.B.G.I. that the duties should be as widely shared as possible, and he assured Mr. Cheetham and Dr. Rees Jones of a warm welcome.

On the proposition of Mr. **T. C. Finlayson,** seconded by Mr. **J. E. Davis,** Messrs. Cash Stone & Co. were re-appointed Auditors for the ensuing year.

Annual Report

The 10th Annual Report of the Council refers to the loss by the death in 1948, of Mr. P. G. G. Moon, a member of the Council since 1944. The practical help received from the Company of which he was a Director was well known and appreciated throughout the industry. In November, 1948, the Institution of Gas Engineers appointed Mr. J. T. Haynes to take his place on the Council.

Owing to the pressure of other public work Professor Sir Lawrence Bragg found it necessary in June, 1948, to retire from the seat which he had occupied on the Council since the Board became associated with the Department of Scientific and Industrial Research. The Department has recently filled the vacancy thus created by the appointment of Dr. H. Roxbee Cox, Chief Scientist to the Ministry of Fuel and Power. The Department of Scientific and Industrial Research has taken a further step in strengthening the link between the Board and the Department by appointing Professor M. G. Evans and Dr. H. L. Riley to act as Visitors.

There have been six full meetings of Council during the year, and at several of these there have been members of one or other of the Advisory Panels, for the purpose of a detailed review of the research programme in a particular field. The Advisory Panel on Gasification has given much thought to the best method of studying gasification reactions under pressure. With the collaboration of the Power-Gas Corporation, Ltd., an apparatus has now been designed and it is proposed that this should be erected at Bournemouth so that further use can be made of some of the facilities which already exist there. Unfortunately, in present circumstances, erection of this special apparatus cannot be expected to be completed in less than two years. The intermediate-scale methane synthesis apparatus is being adapted for a final long-period run at atmospheric pressure. The experiment will start as soon as all components are received, and it is hoped that sufficient data will then be available for the design of a full-scale plant, should this be desired. Erection of the water-gas plant, on which a study of the effect of preheating the air blast will be made, has commenced at Bournemouth.

For the present the work on coke will be limited to the size distribution of coke after the size has been reduced by treatment. After a full discussion with representatives of the Coke Associations it has been decided that the size distribution of coke as produced should be surveyed further by the Association, using the mechanical test-screen.

Widening Research on Utilisation

In the field of gas utilisation it has been possible to widen the research programme by appointing a team to work at the University of Leeds under the leadership of Professor A. L. Roberts, the Livesey Professor, and of Dr. J. E. Garside. The problems which they are studying are concerned with the fundamentals of combustion and include investigations into heat transfer from flame gases to solids, the effect of preheat upon ignition velocity and the stability of flames. The London team have continued the projects active last year on the structure of flames and the corrosion of water heaters.

The Council appointed Professor A. L. Roberts to represent the Gas Research Board at the Third Symposium on Combustion and Flame and Explosion Phenomena, in Wisconsin, last autumn. Great interest was shown in the G.R.B. researches, there was a lively discussion, and Professor Roberts has brought back a number of stimulating suggestions for consideration by the staff.

Full-scale work on the wind pressures developed around spirally-guided gasholders is expected to begin in the Spring of 1949.

At the headquarters premises at Beckenham good progress has been made with the repair of war damage and the premises are now occupied by the Director, the Intelligence Section, and members of the research staff.

Much assistance has been had from the Bournemouth Gas and Water Company in completing the extension of the laboratory accommodation there during the past year. Thanks are also due to Main Water Heaters, Ltd., for rendering available temporary accommodation in their works at Croydon pending completion of the building repairs at Beckenham.

The report includes the usual financial statement. The outstanding feature is that there is a surplus of income over expenditure amounting to £3,866, which is nearly sufficient to make good the deficit of £4,231 which was incurred in the previous year. This satisfactory result was made possible by the decision of the British Gas Council to increase their contribution from £25,000 to £40,700. The total industrial income thus reached the level necessary to qualify for the maximum grant of £28,000 under the terms of the present arrangement with the Department of Scientific and Industrial Research.

The **Chairman** presented the report in summary and moved its adoption.

Mr. **W. S. Hubbard** (Liverpool), in seconding the adoption of the report, said in general terms the report indicated the policy of the Research Board and briefly outlined the work in hand. To obtain some idea, however, of the magnitude of this work one must of necessity read the Director's report. The Engineering industry, quite naturally, was always interested and desired to know what it was really getting for its money. There was a saving in the North that 'you don't get much fitting for a bob.' He sub-

mitted, therefore, that in judging the work and the accounts it should be noted that of the £75,000 expenditure only £50,000 was really spent on research proper, the remainder being largely of an overhead nature.

For an industry which it had been stated, has a capital of over £260 mill., the amount was a mere trifle and he thought that under such circumstances the Board and staff were to be congratulated on their achievements. He was familiar with the activities of *one* of the research laboratories in the North-West; the capital of the Company was £150 mill. These laboratories, opened recently, cost over £500,000, and employed 150 graduates at somewhere between £700/£1,200. That indicated the order in which the industry must give consideration to the matter. After May 1 the whole of the gas industry's capital would be in some kind of concentrated form. It was hoped, therefore, that the amount made available for research would be in keeping with that so successfully employed by many large industrial groups both here and abroad.

At the present time they were severely short of materials, prices were fantastic by comparison, delivery periods were unlimited, and higher efficiencies were being demanded. Alternative material and methods were urgently needed. A programme of pure research, as distinct from operational research, at a level much higher than previously considered, was necessary. It was hoped, therefore, that the new Gas Council would see that in order to retain continuity of the work already done the existing Research Board would be entrusted with this work.

The report was adopted without discussion.

THE DIRECTOR'S REPORT

Dr. **J. G. King,** the Director, then presented his report for the year 1948, an 'annual report on scientific progress.' He reminded the meeting that the reports in this series were framed, not only to present a general statement of the progress of the scientific work undertaken by the Board, but to indicate the purpose of each research project and the method of attack. This was the seventh report which he had prepared, and the fifth which had been presented for discussion. On each occasion he had felt that next time he might have some spectacular advance to place before them, but perhaps co-operative research did not pay dividends in that way and he ought to be more satisfied with this report as it was, a plain record of the year's hard work, though with some interesting highlights.

They had had the Report in their hands perhaps rather longer than usual, and had no doubt come prepared with comments and advice. He must, however, take that opportunity of drawing attention to what he considered to be its special features. The most important of these he had referred to only very briefly in the introduction to the report, namely, the first occupation of a headquarters premises. This was, in his opinion, an important milestone in the development of the Board's work and progress. The report had been arranged in the same logical sequence as last year; it was proposed to retain this sequence as long as possible, making only those minor changes necessitated by the completion of certain projects or the addition of new ones.

Gasworks Processes

The first section included those projects which were concerned with the production and purification of town gas to the stage of distribution, *i.e.*, procedures which took place in a gasworks. They had continued their researches aimed at a sound method of complete gasification. In order to supplement the study of hydrogen/carbon or hydrogen/coal reactions which had been going on at Poole on a 300 lb. static scale, a new reaction vessel had been designed for the study, under conditions of solid flow, of the steam/oxygen/carbon reactions in a system of the gas generator type. This vessel, which was 2 ft. 6 in. in diameter, and its ancillary equipment, was now under construction. This scale was considered adequate to provide data for the design of plant and was intended for operation up to pressures of 50 atm. The dimensions of the vessel were such that it would, in due course, be possible to add this reactor to the existing hydrogenation apparatus.

During the past year they had collected new data on hydrogen/carbon reactions as indicated on pp. 6 and 7 of the report. The decision to experiment on the application to complete gasification of the fluidised technique of control of flow of fine particles had been fully justified. In the United States of America there had been considerable interest in the application of this technique to the production of synthesis gas at atmospheric pressure, but recent information indicated that complete success was still eluding all the research groups. Devolatilisation of the coal at 900° F. had been achieved on quite a considerable scale and so, to some extent, had gasification of the 'char,' but combination of the two stages had not yet been reached. They had operated only in a static vessel, it was true, but they had been the first to operate up to a pressure of 50 atm. successfully, using weakly-caking bituminous coal under pressure. It was interesting that the mechanics of this fluid movement were not greatly affected by pressure. Since the end of the year they had been experimenting with the continuous feed of coal into the reaction vessel.

It was too early yet to quote yields, beyond saying that an adequate degree of methane formation was already assured. An eventual step was to obtain design data for increase of scale in a continuous system. In the United States experiment the scale was 2 ft. internal diameter and the feed was 1,800 lb. of coal per hour; when they reached this scale they should automatically eliminate some of their present difficulties, e.g., the feeding of pulverised fuel was standard practice on a large scale, although it was very difficult in the laboratory. He would like to see this second stage in their work hurried along, as he felt that the technique held considerable promise for a complete gasification process. They were hoping to re-examine the application of the vortex principle of reaction control in this same context. During the period 1937-9 he attempted to apply this technique to gas-making with the objective of using pressure to synthesise methane. The results did show sufficient promise for the vortex to be regarded as a possible third technique for achieving complete gasification. As indicated last year they had suspended academic work on methane synthesis owing to the success of semi-scale development; then final experiment on this scale would start this year and they anticipated success. Not all of their academic work had been published and one paper on the mechanism of the synthesis reaction was to be presented that afternoon. There still remained material for other short papers. The water-gas plant at Poole was in the course of erection and their experiment on the effect of pre-heating the blast should start during the current year. A later objective was to apply methane enrichment to this plant. In the field of purification of gas they had two active programmes. In the first they had studied the hydrolysis of organic sulphur compounds in the presence of H_2S and had been successful in establishing control except for the breakdown of thiophen. The final study in this project would be catalyst regeneration. In the second project they had made a comprehensive study of the purification of coal gas by the oxide-box method. They had already indicated (GRB 43) how considerable improvements in operation control might be achieved. The investigations were still in progress and it was hoped, at a later stage, not only to recommend new operating procedure, but to define clearly the causes of former difficulties. This advance could not have been made without the helpful co-operation of a number of gas undertakings, nine of whom were still doing operational research to help them. The scope of the project was now being extended to the study of methods of recovery of pure sulphur. The objective of this was clearly obvious, but it was already indicated that application of the findings of the box project might facilitate the sulphur recovery project, and eventually reduce the requirements for fresh oxide. The study of causes of corrosion of welded mains in works had continued jointly with the British Welding Research Association and interested contractors.

Research on Refractories

The gasholder design project had advanced to the extent of the construction of all necessary apparatus, the next step awaited only the availability of the selected holder. It was thought that everything would be in readiness before June; they would then have to wait for a period of high wind velocity.

He would take as read the section dealing with the research on refractory materials since a full report of the year's work was presented in November at the Autumn Research Meeting (GRB 41). Notes on the active projects in this section, however, were given briefly in pp. 26 to 29 of the report. The Board's share of the problems of the disposal of effluents from gasworks had remained as before (i) the giving of advice on works problems which involved some *ad hoc* laboratory investigation, and (ii) undertaking research work. In the latter they had shown that thiocyanate formation in scrubbers was increased, though not proportionately, by an increase of an oxygen content in the gas. Since, however, a reduction of concentration by oxygen control was impracticable, they were proposing to return to the study of methods of removal rather than prevention.

Section III, in which there were three active projects, was concerned with coke. The study of mechanical breakage had been given special attention during the year, and it was possible to present an interim report for discussion last November (GRB 42). As a first step, in order to obtain background information, they had examined the performance of one typical two-roll breaker and were now examining that of a single-roll breaker. A start had also been made with a fundamental study of cleavage along shrinkage cracks and other lines of weakness such as those caused by irregular intumescence.

Examples of the practical data which had been collected from breaker studies were given in the report. The figures indicated the effect on breeze formation of breaker setting, and the influence of other variables at a given setting. These figures were, however, only examples from GRB 42, to which Report he would direct attention.

The Technical Committee of the London and Counties Coke Association, with whom they were closely in contact, had asked them to undertake a similar study of methods of screening; this they hoped to undertake as soon as possible. They themselves were making a survey of the industrial practice and screening sizes.

In the field of gas utilisation, projects were active on combustion, heat transfer, corrosion of appliances, and the separation of gases at low temperatures. Dr. Haselden had continued his researches on low-temperature gas separation during 1948, but he regretted to report that they had now lost his services. This might mean some re-orientation of the collaborative work in Sir Arthur Egerton's laboratories, but it was satisfactory to note that Dr. Haselden's valuable work in this field would continue.

The great importance of combustion and heat transfer research to the gas industry had led the Board to expand its programme as from the beginning of 1948. This section now contained nine active projects, as defined on pp. 31 and 32. Projects 1a and 1b followed naturally from the combustion characteristics study reported in GRB 34 and were currently of very special interest, as would be made clear that afternoon. The other projects were all of a fundamental character and their purposes were separately indicated from p. 32 onwards.

Heat Transfer

In the field of heat transfer, the application of infra-red spectroscopy to gas analysis had been delayed pending the supply of more sensitive apparatus and the time had been occupied in studying the radiation characteristics of gas fire radiants. It had been found that certain types of radiant already approached black-body conditions more closely than had been supposed, and that there was little to be gained by modifying the surface of such radiants with materials of high emissivity. The investigation of measurement of radiation had been continued using the GRB block radiometer. New, if small, sources of error in the Moll thermopile had been defined; this work was being continued.

The work of the third Arthur Duckham Fellow, *i.e.*, the fundamental study of energy transfer from flame gases to solids, was now being continued by the Board. During the year the observations of hydrogen/air flames had indicated that the heat-transfer coefficients were all higher (by up to 30%) than the values calculated assuming forced convection to be the only transfer mechanism. The results would be presented in GRB 47.

Projects which were aimed to help solve problems arising in the use of gas-heated appliances had been continued. During the year they had further studied (i) the system oxygen/water/oxides of sulphur and nitrogen; (ii) the behaviour of metal surfaces under the action of combustion products. The first was proving surprisingly difficult in view of earlier claims made by other workers for accurate measurement. In the second they had developed an interesting new technique for the accelerated corrosion of specimens under conditions of repeated condensation and evaporation of water. This they had called the rotating wheel method. The deposition of scale from water below its boiling point could be a serious problem for some districts. During 1948 they had been studying the kinetics of decomposition of calcium bicarbonate solutions, and had collected some interesting results which were indicated in the report. When the application of these had been fully understood it was proposed to present a paper on this subject.

Finally, in the 'Utilisation of Gas' section, there was the problem referred to them by the Institution of Gas Engineers, of finding a substitute for the leather meter diaphragm. Felted and closely knitted fabrics which had been rendered impervious to gas by protecting one surface with plastic material were both showing promise and were now under test.

He had said that the bright spot in this report was the occupation of a new headquarters. They might still be short of staff, but the disability of inadequate laboratory space need no longer be a deterrent to progress. Building operations were still proceeding, but a picture now presented itself of a centre for fundamental research and the necessary administrative and co-ordination of the research groups. With a technical centre at Poole, or elsewhere, an academic centre at Leeds, and collaboration in industry (vide the oxide purification project), the Board was now constituted to expand or accelerate its research effort to meet whatever responsibility the gas industry might now, or in the future, place upon it.

DISCUSSION

Dr. **H. L. Riley** (Director of Research, United Steel Companies, Ltd.), said it was an honour to open the discussion because together with Professor Evans he had been appointed by the D.S.I.R. to act as visitor to the Gas Research Board. The term 'visitor' was a very appropriate one. It probably suggested that one had a cup of tea with the Director and discussed scientific problems in a friendly atmosphere. Indeed, he had already had the opportunity of doing that on two occasions and had visited the Bournemouth station and seen the excellent work going on there. He had therefore read the Director's Report with considerable interest and felt that on this occasion he should offer some constructive criticism in order not to spoil the very friendly atmosphere that had been established.

He was extremely interested in the work he saw going on in the gasification of coal in hydrogen under pressure. This work was of great scientific interest and it might possibly have important applications not at present contemplated. He had been concerned with the development of one of these fluidised processes and in reading through the report one point occurred to him, viz., whether it was possible to take this gasification of coal in hydrogen one step farther. It was mentioned that there had been some difficulty with the temperature control of the hydrogen/carbon or hydrogen/coal reaction, and there were quite a number of processes being developed in America in which it was possible to get a very exact temperature control by circulating a fluid catalyst. In some large undertakings 100 tons of catalyst were used and it was possible to control the temperature within 25° F. On smaller plants, such as one in use in Chicago for the oxidation of naphthalene, it was possible to employ some 10 tons of catalyst and control the temperature within ± 2° F. That was done by circulating the catalyst through some form of heat exchanger, either boiler tubes or cooling coils and in that way to hold the temperature, and if one was dealing with a violent exothermic reaction one could generate useful power in that way.

He did not know how many of the audience were interested in this, but he had copies of some of the patents that had been taken out in connection with this. In the Standard Oil American Patent No. 583032 there was a diagrammatic representation of the means of passing the catalyst through a reactor and through a cooler, and although the diagram was a little complicated, it was possible to do it in an extremely simple way. Perhaps the only patent to hit on this matter of controlling the temperature was British Patent No. 600796. It was quite a simple matter to circulate a fluidised solid bed by taking two vessels and passing gas at a rather different rate through them and owing to the differences in density the liquid would circulate without valves merely by controlling the gas velocity.

Dr. King was one of the first in this country to realise the importance of this. He remembered talking to him after they came back from America and his predictions had been fully borne out by the developments that had been going on. These patents were kept secret during the war and much of the work had only been published recently. He could refer to another American patent which illustrated how closely the fluidised bed resembled a liquid. That was U.S. Patent 2,436,870. That Patent contained the fluidised technique for the preparation of chlorine, which seemed a little remote from the Director's report, but he mentioned it as an illustration of how solid iron oxide behaved like a liquid. In this process of the manufacture of chlorine in a fluidised bed, iron oxide was treated with hydrogen chloride and went to another reactor along with ferric chloride which was formed in the first. This was treated with oxygen or air and chlorine was liberated and one got the iron oxide back again. It was really a heating process. That was a Standard Oil Patent and involved the use of reactors.

An Expensive Business

These were just a few remarks about fluidisation and he congratulated Dr. King on the energetic way in which he and his staff were going ahead in the design of these fluid reactors. It was an expensive business and he would like to reinforce the remarks of the speaker who seconded the motion for the adoption of the report of the Council that as soon as they got above the laboratory scale, expenses went up and one could put two noughts on to all one's figures; as soon as one started on engineering design in problems of this kind it became extremely expensive. For that reason, it occurred to him that it might be wise for the Gas Research Board even to contemplate buying some of these designs from America. It sounded rather expensive, but if one worked it out on a cost basis and taking time into consideration—he threw it out as a suggestion—it might be worth considering because the Americans had 10 years' start of us. Hitherto all these plans had been kept secret and they had been able to go a very long way in the United States.

There were two or three minor points in the report to which he would like to refer. Reference was made to the formation of methane by the interaction of carbon monoxide and hydrogen and the fact that the results had indicated that little, if any, methane was formed despite the potential catalytic properties of the large surface area of the hot fuel particles. If the work was carried on something on the lines of the Fischer Tropsch process by converting coal directly into C_2 hydrocarbons, it would have commercial value. He was interested to read the remarks on the effect of caking on these fluidised beds. It would be rather interesting if they knew the coking indices of the high volatile and low volatile fuels used.

He was rather surprised to read about the effect of activation mentioned in the report. There was a statement that 'the activated cokes show no advantage over the corresponding unactivated samples.' That was quite contrary to an enormous amount of work that was done by Mr. Rhead at Birmingham during the war,

on the activation of coke in a mobile producer and the work they did at Newcastle on a laboratory scale. It was definitely shown that certain organic substances such as sodium carbonate had a definite catalytic action on low temperature combustion or on the lower temperature region of the combustion of carbon.

Experience at Poole

Dr. **W. Idris Jones** (National Coal Board) congratulated the Director on his interesting and valuable report, and on maintaining the momentum of research under not inconsiderable difficulties. He had been able to see at first hand the work his staff were carrying out at Poole Gasworks and it seemed to him to be of considerable importance and value not to the gas industry alone, but to other industries also. The work on complete gasification was most important and had a great potential impact on the future of carbonisation generally. The successful applications of processes of complete gasification of coal would remove the coke incubus in gas production and reduce the demands of the gas industry for those coals potentially more valuable for the production of metallurgical coke. This was a fact of considerable national importance. He was glad to note that the work had been advanced one stage further and that the process was now being studied under dynamic fuel bed conditions as in the Lurgi process for brown coals.

Some years ago they sent some South Wales dry steam coals to Frankfurt-on-Main for test and he inspected the Lurgi plant at Hirschfelde, in Saxony. They received estimates from the Lurgi Gesellschaft for plants producing approximately 3.2 and 8 mill. therms per annum of 450 B.Th.U. gas from dry steam coals. He had recently endeavoured to bring these estimates up to date and the calculated prices of town gas were rather staggering and exceeded 9d. per therm for the larger plant. Of course it might well be that the figures for the feebly caking high volatile coals would be much more favourable. He mentioned this cost factor as being not irrelevant and it would be interesting to know what the estimated gas production costs for high volatile coals ran out at on the basis of the results obtained with a static charge at Poole.

Vortex gasification and fluidised gasification again had an impact not only on the gas industry but also on the future of the carbonisation industry. He did not think one needed to be unduly prophetic to suggest that 20 years from now they might well be producing metallurgical coke by methods radically different from those used today. The work on gas purification would have wide application and increasing attention would no doubt be paid to the study of sulphur recovery by extraction and other means. This work would also be greatly appreciated in some of the Commonwealth countries, *e.g.*, New Zealand, where the prospects of using high sulphur coals for gas making, coupled with the need for an indigenous source of sulphur was envisaged perhaps more acutely than in this country. They were probably ahead of the U.S.A. in the matter of sulphur recovery, largely as a result of different economic conditions, but there was evidence that American interest in this subject is increasing.

Coke Breakage

He was interested to note the plans for the work on gasholder design, but was sure they would not regard it as ungenerous of him to express the hope that opportunities for the measurement of high wind velocities did not occur too frequently during the coming months.

He had an opportunity of discussing the work on coke breakage when he was at Poole and they would watch the continued progress of this important work very attentively in view of the importance of reducing the tonnage of coke fines and the reduction in value of coke as the size was reduced below certain limits. In one or two of the Divisions of the National Coal Board, reduction of the amount of coke fines produced would be a most valuable contribution to this side of the industry. Was it too much for them to hope that the name 'coke breeze' might soon be a relic of the past and that coke fines (or breeze) would in future be looked upon as material below, say, one-tenth of an inch in size as in the U.S.A., and not below ½ or ¼ in. in size as at present. Here was another problem of utilisation to tackle—*i.e.*, the utilisation of coke of one-tenth inch to ½ in. size.

He would stress the value of the work on refractories in view of the shortage of silica bricks and the loading placed on coke ovens which were having to run to the limits of capacity and throughput, with a consequent shortening of life. The thermal analysis of quartz might also prove of interest in connection with geophysical surveying and interpretation of strata. The effluent problem was one of common interest to the gas and coal industries and had an economic as well as a nuisance aspect.

They were very interested in the work on infra-red spectroscopy for the analysis of gases. Although the Gas Research Board work was restricted at present to town gas, it should form a valuable contribution to a technique which was arousing great interest at present and was developing rapidly in many fields of research and application. Another valuable contribution to the analytical field was afforded by the work on SO_2 and SO_3 estimation in the products of combustion of town gas. The use of a turbidimetric method for the determination of sulphuric acid in low concentrations might have applications in coal analysis.

He was interested also in the work on the production of medium purity oxygen or enriched air. The production of oxygen in the States had increased to something over 5,000 tons a day and the work of the B.I.S.R.A. and the Gas Research Board and the chemical industry might well lead to marked progress in the production and use of industrial oxygen during the coming years.

The separation of ethylene and methane from town gas and the planned work on phase equilibria, latent heat and Joule Thomson coefficients for binary mixtures were also of value and might have a great future in providing raw materials for the chemical industries, especially if the residual gases after methane and/or ethylene removal could be used without loss of compression energy, *e.g.*, for long distance transmission, ammonia synthesis, and the like. Another helpful factor would be the recovery of benzole under pressure before liquefaction. They were glad to hear that this work would continue despite the loss of Dr. Haselden.

Finally he referred to the six valuable papers contributed by the Board's staff to the 3rd Symposium on Combustion, Flame, and Explosion Phenomena at Wisconsin University. Contributions such as these helped considerably in maintaining the prestige of British research in the U.S.A. and in other countries and should be encouraged to the utmost possible extent. He congratulated Dr. King and his staff on a most valuable and interesting report and wished them well in the future.

Progress at Leeds

Professor **A. L. Roberts** (Livesey Professor) said to those concerned with the research side of gas engineering, the Director's clear review of the whole programme of the Board was especially valuable in showing the perspective of the Board's activities. What seemed to him to be particularly well conveyed was the sense of balance in the work, not only in its allocation between gas production, gas utilisation, coke and other sections, but also in the satisfactory blending of short and long-term work. Although much remained to be done, the progress recorded in short-term projects, such as oxide-hardening and coke, must give satisfaction to members of the Board and encouragement to Dr. King and his staff.

Both Dr. Hollings and Dr. King had referred to the widening of the combustion programmes by the formation of a special team at Leeds under the Joint Research Committee. This venture had already shown considerable success. Not only had good progress been made with existing researches, but also a start had been made on new projects such as high-speed combustion, the tolerance of appliances to changes in gas quality, and other items listed in Dr. King's report. While these were largely fundamental and long-term in character, they were designed ultimately to meet practical demands which had arisen within the industry itself.

He was glad to endorse Dr. King's statement on the collaboration between the Leeds and London teams which had been close and most effective during the year under review. This collaboration had been even closer than the report indicated. As members would know, they were interested in the possible applications to gas purification of the fluidised-solids technique, and the team engaged on this had had the advantage of discussion and interchange of views and experience with the staff at Bournemouth working so successfully on gasification by this method. Incidentally, their work on the removal of hydrogen sulphide by the fluidised technique had made considerable progress since last November, so much so that, just as in the Board's work, attention was now being given to the recovery of elemental sulphur. In developing the process still further, he hoped that they would be able to work hand-in-hand with the Board. He congratulated the Director and his staff on the variety of subjects now under investigation and the decided progress made with most.

Fundamental Research

Professor **M. G. Evans,** F.R.S. (Professor of Physical Chemistry, Manchester University), added his congratulations to those of the previous speakers. He was more interested in the academic aspect of the work that had been presented and which had been done in the past year by the Board, but in looking at the report and listening to Dr. King one had to appreciate that the wide range of topics discussed were being dealt with essentially in regard to practical day to day problems. At the same time, fundamental long term investigations were being carried out under the direction of Professor Roberts at Leeds. Thus the two aspects were being dealt with but it was important to maintain the underlying tone of fundamental investigation in such an organisation as this. From his point of view, that was the heart and soul of any such organisation and provided the lifeblood for the whole structure of fuel research. Without that underlying inspiring feature fundamental research would be rather barren.

He had been interested in the concerted attack which was being made on the structure of atoms and the nature of the radicles and

molecules which were formed. A very fine front was being built up. There was the spectroscopic side, the temperature side, heat exchange, and so on, and all these were dovetailing together and should form a complete and unified pattern of their understanding of the nature of flames. He drew attention of workers in this field to new techniques that were coming in such as the lime reversal method with electrical temperature which people had thought of and also the radio frequency method of investigating flame. All these tools bore on the same problem of the nature of the particles in flames and if he might refer to the more detailed report on this matter which they would be having later from Dr. Kilham he would say that to him the interesting feature about flame was that it was a non-equilibrium system. Molecules were coming in and changes occurred, molecules were leaving and dying, and they had the same kind of problem as they had in a population. There was a birth rate and a death rate and a stationary concentration of certain particles and certain molecules. That was a non-equilibrium system and they would have stationary concentrations which could not, perhaps, be treated by normal equilibrium methods and the important point he would like to make was that in the last few years methods of treating non-equilibrium systems by an open system of thermo-dynamics have been built up. As Kilham had shown, it was not sufficient to consider just the equilibria between radicles and molecules ; they must also consider the stationary concentrations in a non-equilibrium sense and the influence they would have on the temperature and the heat exchange. These remarks did not in any way detract from his admiration for the work that had been and was being done by the Gas Research Board. It was a beautiful piece of work.

With regard to the kinetics of thermal decomposition of calcium carbonate solutions, that was an extraordinarily difficult problem. It seemed to him that there one had two processes. One was the ordinary chemical process and the other the problem of the formation of nuclei and the growth of these nuclei into crystals and their precipitation. This field of the formation of nuclei and the growth of nuclei crystals was one which was now becoming of some importance about it. The knowledge in this field at the moment was very meagre indeed and work of this kind would, if carried out in a fundamental way, help in their understanding of it.

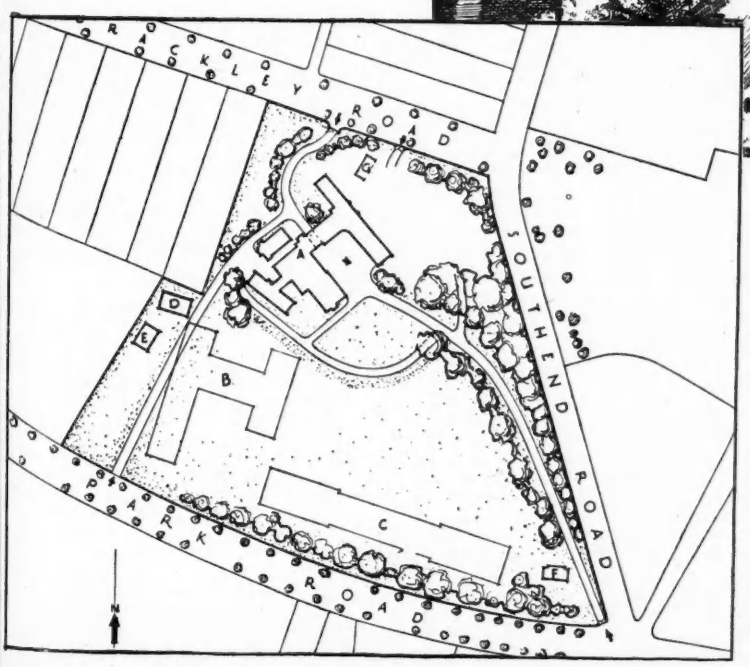
Separation of Gases by Refrigeration

The other question in which he was particularly interested and was glad to hear was going to be carried on, was that of the separation of gases by refrigeration. In the section of the report dealing with the thermodynamic properties of mixtures at low temperatures, reference was made to the measurement of phase equilibria. This was of great importance to industry, but again, following the line he had already taken, he would like to see the spirit of fundamental research permeating these severely practical problems. There were enormous theoretical problems of fundamental scientific importance in this kind of investigation. At the moment their knowledge of the thermodynamics of liquid mixtures and of gas mixtures needed expanding and studies of this kind were of the greatest possible importance. At the back of this, not only was there a severely day-to-day practical problem, but there was, at the same time, a problem of the most important theoretical and academic importance.

Mr. **C. A. Masterman** said that in connection with the corrosion of water heaters, the diagram referring to the rate of corrosion equated the gas rate and the weight of the decay of the metal. Corrosion was important from two points of view ; the possible penetration of the wall, in connection with which the corrosion should be expressed not in weight but in volume, or alternatively, the other important aspect of corrosion was the blockage of the flue-ways in which case surely the corrosion was better expressed in the volume of the deposition in the flue-ways as a result of this primary corrosion.

Gas Research Board New Headquarters

THE ABBEY, BECKENHAM, KENT



The Gas Research Board was formed just prior to the war and owing to restrictions on building it was not possible for the Board to become housed immediately in a suitable headquarters. After much searching a site was eventually selected at Beckenham and Dr. King now reports that he has moved there with his staff from Gas Industry House, the research team from Croydon and the Intelligence Section.

Reconstruction work on the existing buildings, which were previously used as a school, is in progress at present, and it is estimated that the repairs will be completed by July of this year. These are, however, considered as being only a temporary measure and plans have already been made to build new, modern laboratories in the extensive grounds. On the left is a plan of the site, 'B' and 'C' showing five and ten year extensions respectively. Above is a front view of the existing buildings.

Dr. **Harold Hartley** (Radiation, Ltd.) said he could not allow this opportunity to express his satisfaction at the amount of energy now being expended on utilisation to pass. The Chairman was possibly being attacked from more than one side in this connection. Nowadays they did, and had done, a great deal of work in connection with gas making, perhaps in the hope that it would bring in quick profits. Some of the audience, who did not always attend their meetings, were able to persuade others that they understood this work and 'they think you think they understand it,' but when they came to the utilisation side they very frankly asked what good purpose such work served. On the question of gas making, Dr. Idris Jones made a pertinent remark when speaking of the gasification of some of these coals with regard to gas at 9d. per therm but he put it that the prospects of reduction in cost on the utilisation side were such that there was still hope of reward by paying attention to that side and that they would be able to save far more in pence per therm in that direction than was possible on the gas making side. He knew he was trailing his coat but he would also like to refer to the measurement of radiant energy. It was 37 years since the Bloch radiometer was put forward and while he appreciated that for the scientific reputation of the staff it was desirable to investigate the problems of radiant emission and radiant absorption both by gases and solids thoroughly, he would appeal on behalf of those who were concerned with the use of the apparatus that it would be a good thing to pay greater attention to the utilisation side. Then industry required some standard apparatus so that people concerned in making and selling and buying appliances would have a yardstick with which to measure them.

He was very glad that Scholefield and Garside were prosecuting their investigation. They would re-read the earlier discussions, if they had not already done so, and particularly take note of what Professor Evans had said and what he (Dr. Hartley) had said on another occasion. If their work enabled the makers of appliances to increase the efficiency of gas heating appliances from 50% to 60%, that would be the equivalent of saving 2d. per therm so far as gas was concerned for the user of the apparatus in pre-war days. What it would save today they could work out for themselves.

A Brief Reply

Dr. J. G. King said the discussion had been so fruitful of comment that he would prefer to answer it in detail later. He was very grateful to those who had come with such carefully prepared material for the discussion. Their comments had been fruitful and constructive and they would be most useful. Dr. Idris Jones had gone in great detail into some of their projects and had offered very constructive advice, for which they were most grateful. In reply to Dr. Riley, he would say that they were aware of many of these U.S. Patents. One was always a little worried in research work as to who was going to own a patent if eventually the work reached that stage. The development of their work was being carried out as a non-productive piece of research and they must go ahead and leave the question of cost for later consideration.

Professor Evans had stressed the importance of co-operation. This co-operation between the Gas Research Board and the academic work carried out by Professor Evans had been extremely valuable and when a combined effort on the same subject was made it always led to accelerated progress. The study of the fluidised technique in its application to the problem of the removal of hydrogen sulphide had made excellent progress and there would be something achieved there quite soon which would be worthy of consideration for technical development The theme of Professor Evans' statement that they must keep a strong basis of fundamental work underlying the work of the Gas Research Board, he could not agree with him more fully. They did their best in this direction and it was only the comparative shortage of staff that prevented them from going even further in that direction. Professor Evans had mentioned some points in connection with the study of the decomposition of calcium bicarbonate of which they had given the results. They had covered much of the ground but he looked forward to discussing this with him when he appeared next time as a 'visitor.'

Several speakers had referred to the importance of continuing the study of the separation of gases by refrigeration. This would be a problem for the Council. The Council would have to decide whether, through the loss of Dr. Haselden, they were to hand the work to other staff or whether they could leave the matter in his hands. That was an important problem for the Council to decide. Mr. Masterman had suggested that corrosion should be discussed in terms of volume and not weight and they would note that point and deal with it in the future. They were all interested to hear what Dr. Hartley said about the organisation of research work. One heard on all sides the question 'What is it going to cost?' and what was the implication of cost of research work. It was not altogether appropriate that a research team should go too deeply into the study of cost. They should make a study of the scientific facts and then go to the practical men in industry and ask them to help to enable the matter to be pursued farther. He felt that was the way it should be done and he did not think the report of the Director of Research should include considerations of cost.

Tribute to Dr. Braunholtz

Before the luncheon adjournment, the **Chairman** said the members would be sorry to hear that this was the last meeting of the Gas Research Board that Dr. Braunholtz would be attending in the capacity of Secretary. He had had a letter from the President of the Institution of Gas Engineers asking that they should discontinue the arrangement whereby they had had his part-time services, in view of the great volume of work required of him by the Institution. He thought perhaps they had not always realised the services which he had rendered to the industry in that way, and so it was very pleasant to know that in the last Birthday Honours List he had been awarded the O.B.E. This matter had not yet been before the Council, and with the concurrence of Mr. Crowther, Dr. Braunholtz had very kindly agreed to carry on until some fresh arrangements respecting the Secretaryship could be made.

He would like to take the opportunity on their behalf and on behalf of the Council of thanking Dr. Braunholtz and all the members of the staff of the Institution of Gas Engineers for the services which they had rendered to the Board since its formation. It was obvious that with the transfer of their headquarters to Beckenham a number of changes in the details of the office work and the administration work would have to be made. He would like to express his personal thanks to Dr. Braunholtz for his great courtesy at all times, which had made it possible for the move to Beckenham to take place so smoothly.

Dr. E. V. Evans also added a tribute to the work which Dr. Braunholtz had given them. In the very early days, when they were trying so hard to establish the Gas Research Board, to the accompaniment of aerial bombardment and many other difficulties, Dr. Braunholtz was really the backbone of the organisation, and for a time he took on the Directorship because in those times it was impossible to find anyone to occupy that post. The Gas Research Board as they saw it today was quite largely the work of Dr. Braunholtz and he would like to add his tribute to the services which he had rendered and his thanks to him for all he had done for the Board.

The Dark Days of 1940

Dr. **W. T. K. Braunholtz,** in reply, said that it was very difficult for him to find just the right words with which to thank them for the very nice things which they had said, and which he only wished he could feel were really deserved. It was, he thought, at the outset of the Gas Research Board a natural step that the first Secretary of the Board should be ex-officio the Secretary of the Institution of Gas Engineers. It had facilitated the birth of the Gas Research Board, and this close collaboration between the Board and the Institution had been facilitated throughout the first 10 years of its existence. Dr. Evans, in the words he had used, had reminded him of one small incident which occurred in the year 1940. The constitution was being drafted in collaboration with the Department of Scientific and Industrial Research. He happened to be consulting with the D.S.I.R. representatives on the wording of the constitution in a small room at the top of the building when their deliberations were interrupted, as so many deliberations were in those days, by the appearance of hostile aircraft which dived out of the clouds and proceeded to drop its load not far from there. They could not determine at the time whether the target was themselves or the Houses of Parliament only a few yards away. In any case, the bombs actually fell at a point equidistant from themselves and the Houses of Parliament. It was obvious that no visitation from the enemy could have put any damper on the enthusiasm for the formation of the Gas Research Board, which they now saw in its sturdy youth.

The work which had fallen to his lot in connection with the Board had always been interesting, and it is with great regret that he found it necessary to give it up. It would, in fact, be quite impossible to attempt to carry on the Secretaryship of the Gas Research Board any longer when, among other things, it had its own establishment many miles away from the headquarters of the Institution. He would like to thank them all very much indeed for their kindness. He would like to thank them also for their forbearance and their help during the last ten years in which he had held the office under the Gas Research Board ; and he would like to say that if there were any way in which by advice or otherwise he could be of assistance in the future he was entirely at their service.

Birmingham Gas Department reports a new weekly record in gas output for the week ended Mar. 12. A total production of 587,759,000 cu.ft. was made, compared with the old record of 580,526,000 cu.ft. for the week ended Feb. 28, 1948. New daily records were also created in the same week for output on Tuesdays, Thursdays and Fridays. Total output since April 1, 1948, is 22,972,478,000 cu.ft., compared with 21,323,117,000 cu.ft. in the corresponding period for the previous year—an increase of 7.74%.

MR. A. E. SYLVESTER ON THE FUTURE OF GAS RESEARCH

DETAILS NOT YET FORMALLY DISCUSSED

THE annual luncheon of the Gas Research Board was held at the Savoy Hotel on April 7 under the presidency of Viscount Falmouth. Among the principal guests were Mr. A. E. Sylvester, Chairman of the Gas Council ; Sir Ben Lockspeiser, Chief Scientist, Ministry of Supply ; Dr. H. J. Gough, President of the Institution of Mechanical Engineers ; Sir Charles Ellis, Scientific Member of the National Coal Board ; Engineer Vice-Admiral Sir Harold Brown, Chairman of the Fuel Research Board ; Dr. H. Roxbee Cox, Chief Scientist, Ministry of Fuel and Power ; Professor C. G. Douglas, Professor of General Metabolism, Oxford University ; Professor Sir Alfred Egerton, Professor of Chemical Technology, Imperial College ; Colonel H. C. Smith, Deputy Chairman of the Gas Council ; and twelve Area Gas Board Chairmen, including Mr. E. Crowther, President of the Institution of Gas Engineers, and Mr. C. H. Chester, Vice-President of the Institution.

Mr. **A. E. Sylvester,** F.C.A., proposing the toast of the Gas Research Board, said the gas industry was on the verge of a great change, for on May Day, just over three weeks from that day, it would become nationalised. He used that word as a very quick description of the change, although it could mean so many different things, not only in fact, but in people's minds. It was one of those words like co-ordination, or centralisation, or Mesopotamia, which appealed to the emotions rather than to the intellect. Naturally the word was not used in the Gas Act.

The Meaning of Nationalisation

In their case it meant, primarily, two things—first a change in financial structure and ownership and second a change in organisation, which involved the setting up of 12 Area Boards and a Gas Council to take the place of something like a thousand separate undertakings. But the task of the industry was not changed ; it remained what it was, that was, to maintain and if possible to improve upon the useful public service that had been so honourably fulfilled up to the present. And this meant that in overwhelming degree the same people would be doing the same jobs. In this respect one could truthfully say 'Plus ça change, plus c'est la même chose.' He did not think that any there that day would underestimate the immediate problems of the Boards and Council. They were concerned with the actual take-over on vesting day and as the Boards were not constituted until January their hands were very full indeed with these immediate and pressing problems. They would not therefore be surprised to hear that in these circumstances important matters such as the future of research in the industry had not yet been formally discussed. For this reason, what he had to say on the subject must be taken as his personal opinion and in no way a statement of agreed policy. He apologised in advance for breaking all the rules. He knew he ought to try to entertain and amuse, but when he undertook to propose the toast he realised that as Chairman of the Gas Council he was being put on the spot. He was being invited or, perhaps, challenged to say something about the future of research in the industry, but, greatly daring, he accepted the invitation—or the challenge—whichever it was. 'Serious, therefore, in the circumstances, is what I can be nothing else but.'

Survey of Whole Field

'Let me begin, then, with the Gas Act, 1948,' continued Mr. Sylvester, 'The first two Sections establish the Area Boards and the Council and set out in general terms their duties and powers. Thus the stage is set. What comes next ? By a great stroke of imagination, as soon as the curtain goes up, research occupies the scene and has Section 3 all to itself. This fact, which underlies all I have to say to you today, emphasises the importance which is to be attached to research in our new organisation. Now for the benefit of those who have not got this Section by heart I must give a brief paraphrase. It is the duty of the Gas Council—in consultation with the Minister—to settle a general programme of research and then to see that it is carried out. The Council is empowered to conduct research itself and to make arrangements with other persons, including Area Boards, to conduct research.

'Here, then, quite clearly and without question, is the starting point for all thinking about the future of research in the industry and there is no other. The words 'a general programme of research' are, as one would expect, very broad in their implications, but it is, surely, clear that they are intended to refer to research of the type that is called fundamental or long-distance research. But when we pass from a consideration of a programme to the planning of an organisation I am inclined to think that a survey of the whole field will be desirable. It may well be proper for the research organisation to be fully comprehensive in its scope, covering not only fundamental research but development work and the control of processes. And in this connection the advantage of maintaining the closest possible contact between research and operation must not be lost sight of.

'It is clear that the Council is not a scientific body and it surely goes without saying that the very best scientific advice must be taken by the Council, both in preparing a programme and in deciding how it is to be carried out. There is no ban on the use of existing organisations (and I am thinking particularly of the Gas Research Board) and I have no doubt strong arguments will be made in favour of continuing work that has been so well begun. But at the same time, the duty of co-ordination is laid fairly and squarely on the shoulders of the Council and *that* duty cannot be shelved or delegated. I think few will disagree with me when I say, speaking as a layman and onlooker, that co-ordination has been perhaps the weakest point in research in the gas industry up to now. If this observation is just, we have a real opportunity to put things right ; indeed, it is our plain duty.

'But I would be much misunderstood if anyone should think that I underestimate the work that has been done. Apart from the Gas Research Board itself, which is very much in your minds today, there are notable contributions to research from other organisations. I am thinking, of course, of gas undertakings themselves, where, owing to a lack of balance in the industry, the burden has almost wholly been carried by a very few of the larger undertakings. The universities (especially Leeds), the Department of Scientific and Industrial Research, the manufacturers of plant and appliances, industrial gas centres, associations dealing with coke and tar—all these make their appropriate and welcome contribution to what must be considered an impressive total. Yet, in spite of all that is being done, and again I speak with diffidence, I cannot but feel that the total is far from adequate for so great and growing an industry. It may well be that with a new outlook on co-ordination may come a re-assessment of our needs and opportunities in research and a more liberal investment of funds, for in this connection investment is a better word than expenditure.

Tribute to the Board

'I have explained why in proposing this toast I have referred you to the duty of the Gas Council and the new starting point for research in the industry which that implies, instead of confining myself to the Gas Research Board itself, which is the subject of my toast. But now I can leave these general matters and we can return to our muttons. On behalf of the gas industry I wish to pay sincere tribute to the work of the Gas Research Board, to those who administer it, to those who served it in whatever capacity. Its formation in 1938 meant that within a very short time its work could only be carried on with great difficulty owing to the war, but a perusal of its achievements and its current achievements and its current programme shows what strides have been made. The Council, under the chairmanship first of Dr. E. V. Evans and latterly of Dr. Hollings, has been well served by its members, who represent not only the industry (through the Institution of Gas Engineers) but also the makers of plant and appliances, as well as the Department of Scientific and Industrial Research.

'I am sure you would wish me to mention the Livesey Professor, Professor A. L. Roberts, to congratulate him, not only on his work at Leeds University, but also upon his appointment as a member of the North Eastern Gas Board. He, I am sure, is proud to be able to build upon the foundations laid by his predecessors, Professors Bone, Cobb, and Townend.

'The Gas Research Board is well served by its officers in all its branches of work, and while it would be invidious to mention a name or two when so many deserve mention, I do not think that anyone would forgive me if I omitted to record the names of Dr. King and Dr. Dent, and of course of your Secretary, Dr. Braunholtz. Not only the Board, but the gas industry is fortunate in having such devoted workers and leaders To those as well as to all the unnamed I can give a real assurance that whatever changes in organisation may come to pass, the work must go on. Indeed it is my hope and belief that under the new shape of the industry the opportunity for useful service will be greater than ever before.'

In conclusion Mr. Sylvester referred to three persons, first to Lord Falmouth, the President, whose deep interest in the Board's work was so much appreciated. Second, there was Dr. E. V. Evans, under whose chairmanship the Council began its work and

Star

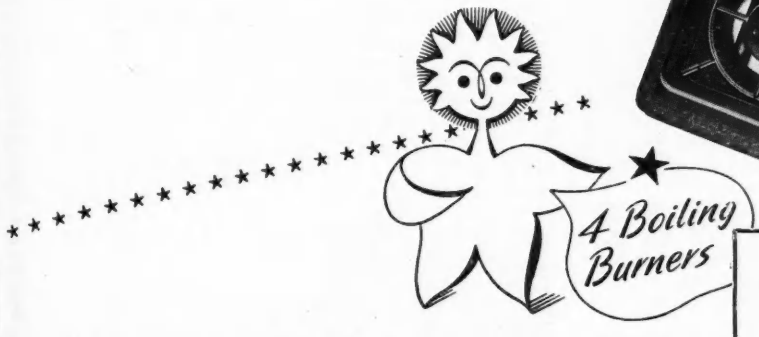
NEW WORLD

PRODUCT OF Radiation Ltd

Radiation House, Aston, Birmingham, 6

NEW WORLD NEW WORLD NEW WORLD

performance

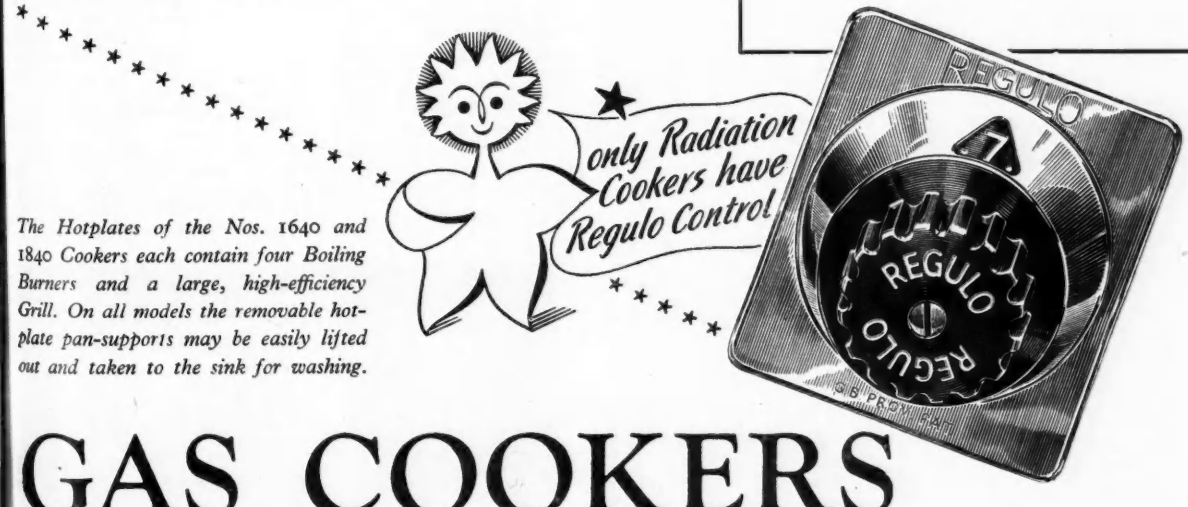


The two larger sizes of the No. 1430 series—the No. 1640 with oven 16″ high and the No. 1840 with oven 18″ high—are now coming into production.

They embody all the modern developments resulting from Radiation research, in addition to those features already so well appreciated by more than two million satisfied users of NEW WORLD Cookers.

10 POINTS OF SUPREMACY

1. Elegant in appearance
2. Easy to clean
3. Cooks superbly
4. Saves gas—4 therms do the work of 5
5. Air-float oven heats quickly
6. Spring-sealed door conserves heat
7. Regulo controls oven temperature
8. Rigid construction for strength
9. Leak-proof Vertico taps
10. Easy-action plategrid and covertop



The Hotplates of the Nos. 1640 and 1840 Cookers each contain four Boiling Burners and a large, high-efficiency Grill. On all models the removable hotplate pan-supports may be easily lifted out and taken to the sink for washing.

GAS COOKERS

Showrooms & London Offices: 7 & 8 Stratford Place, W.1 (Phone: Mayfair 6462.) PRODUCT OF Radiation Ltd

NEW WORLD NEW WORLD NEW WORLD

T.20

who laid the foundations of future success. And finally, Dr. Hollings, whose name he was to couple with the toast. It had been his privilege to be closely connected with Dr. Hollings for a number of years and all would agree when he said that his position and reputation were in no way accidental, but were due to his outstanding ability and strength of character.

Two Points of View

Dr. **H. Hollings,** Chairman of the Gas Research Board, responding to the toast, said he would confine his brief remarks to two general observations on the background of the work of the Gas Research Board during the last few years which he thought should be appreciated as widely as possible. In planning the research programme the Council had had to reconcile two points of view. It was impressed upon them by some, and particularly by the Department of Scientific and Industrial Research, that they ought to concentrate on fundamental investigations of a long-term character. There were others who took the view that they should seek quick solutions to the immediate practical problems of the industry. To any of those present he would say that their criticisms of their preoccupation at times with matters which they felt were far removed from the retort house and from the balance sheet were as nothing compared with the strictures of the pure scientist upon the impurity of some of their activities on their behalf.

He would like to explain in a word how they had attempted to compromise or to reconcile those two points of view. The present structure of their programme was really based on the belief that in the field of manufacture of gas up to the holder inlet, the position was that expert technical knowledge based on past research work had reached a point at which they must take stock. That knowledge is based in no small degree on the early work of the predecessor of that organisation, namely, the Joint Research Committee of the Institution with the University of Leeds, which guided the early researches of Dr. Parker and Dr. Dent. Their present view was that all this technical knowledge in the field of gas manufacture had got a long way ahead of industrial and commercial application in the gasworks of the country. Therefore, while they were continuing a programme of gasification under pressure at Bournemouth, they had tried to restore the balance of the programme by starting more investigations on works of a short term character. The details of those were perfectly well known to those who had been following their proceedings. The point he wanted to make was that in this field they took the view that the more pressing matter for the industry was that the efficiency of all the works in the industry should be brought up to that of what had been established in a few of the best works.

When they turned to the broad subject of gas utilisation, however, they found a different picture. It was agreed that those who were engaged on the design and development of modern gas burning equipment, both domestic and industrial, were often handicapped because of a lack of precise knowledge concerning the factors which influenced flame structure and the mechanism of transfer of energy from the flame to the object which was to be heated Accordingly, with the active help of Professor Roberts and with the advice of Dr. Townend, who had kindly continued his interest in their affairs, they were conducting a number of purely scientific investigations in those fields. These matters would be discussed further at the meeting that afternoon but it must be appreciated that this kind of work did not quickly give practical results unless one was extraordinarily lucky.

Encouragement

The second difficulty with which, in common with others, they had had to contend, had arisen out of their uncertainty as to the future structure of the industry under nationalisation. As Mr. Sylvester had said, the Gas Research Board was originally conceived to cater for the needs of an industry composed of several hundred units. They fully recognised that the original shape might have to be altered quite considerably to meet the needs of an industry composed of 12 Area Boards. He would assure Mr. Sylvester and the members of the Gas Council present that the desire which was uppermost in the minds of those associated with the Gas Research Board, including their good friends of the Society of British Gas Industries, was that they might shape their organisation so that it would best fit the shape of the industry and best meet the needs of the industry. They were very appreciative of Mr. Sylvester's address and would be encouraged to carry on with their existing programme pending some more formal discussion by the Council. It was obvious that he who paid the piper would in due course call the tune. He hoped he would realise he was in the fortunate position of having a number of very musical pipers who were only too anxious to play the right tune and to play in tune.

Lord **Falmouth,** proposing the toast of the guests, said how pleased they were that Mr. Sylvester had been able to attend and make his interesting speech. He also welcomed Engineer Vice-Admiral Sir Harold Brown, Chairman of the Fuel Research Board, Sir Charles Ellis, Scientific Member of the National Coal Board, Dr. D. T. A. Townend, President of the Institute of Fuel and Director of the British Coal Utilisation Research Association, Professor A. L. Roberts, Livesey Professor, Leeds University, Mr. E. Crowther, President of the Institution of Gas Engineers and Chairman of the Northern Gas Board, and Dr. H. J. Gough, President of the Institution of Mechanical Engineers. Science was well represented by the presence of Professor Sir Alfred Egerton, Professor Douglas, Professor Evans, and Professor Roberts, and many others. They took it as a good augury for our Board that these fundamental scientists were interesting themselves in the work that they were undertaking. They also welcomed a number of the Chairmen of the Area Gas Boards and congratulated them on the positions in which they found themselves. They sincerely hoped that when these great bodies got going the whole country would reap the result of their great experience. Finally, they welcomed Sir Ben Lockspeiser, shortly to become Secretary of the Department of Scientific and Industrial Research.

Resource and Ingenuity

Sir **Ben Lockspeiser,** in replying to the toast, said it was a simple task to assume the responsibilities of Secretary of the Department of Scientific and Industrial Research, and it was an even greater responsibility to follow a scientist of the eminence of Sir Edward Appleton. He could only say that he would do his best to further the cause of science in the D.S.I.R. and would try not to lower the level of that famous Department. He confessed that he had not a first hand knowledge of the gas industry or of its research activities, but he would take early steps to remedy that deficiency. Most people had been aware that for many years the gas industry had shown remarkable resource and ingenuity which were the mainsprings of scientific research. The gas industry had been operating for 150 years, and he remembered reading that in the middle of last century some of the streets of London were supplied by the mains of competing gas undertakings. When a householder applied for a supply of gas it was not unknown that one gas company would connect up the supply pipe to the other company's mains. He doubted whether they themselves knew of the great impetus that had been given in the past to the overcoming of defective slot meters. The trouble with the slot meter was that one had to put real money into them. He had heard of a gentleman who resorted to scientific methods of producing ice pennies which operated the gas meter and then melted away, leaving no traces. After a long period of ingenuity their research work was now canalised, or respectabilised, in the Gas Research Board, to whose activities he wished every success.

JOHANNESBURG'S NEW HOLDER

Johannesburg's new 3 mill. cu.ft. gasholder is now completed, and was tested at the end of February, when its bulk was raised as a centrifugal fan filled it with air for testing purposes. The new holder, made of 1,600 tons of steel plates, is the first to be made by South African labour. It has cost £143,000, and has taken two years to build.

In capacity, it equals the combined storage of the existing three holders in Johannesburg, and it is expected that the new holder will give sufficient storage capacity to meet Johannesburg's gas demands until 1955.

The holder was built at Germiston, under the supervision of Ashmore, Benson, Pease & Co., Ltd., the designers, by Dorman, Long (Africa), Ltd., and it will be officially opened in the near future.

The London and Southern Junior Gas Association visited the works of George Kent, Ltd., and Electrolux, Ltd., on Mar. 30. In the accompanying photograph are, left to right: Messrs. L. J. Clark, B.E.M. (President, London & Southern Junior Gas Association), W. G. Ardley (Joint Managing Director, George Kent, Ltd., and M. S. Broughton (Managing Director, Electrolux Ltd.).

WOMEN'S GAS COUNCIL'S NEW BRANCHES

Following a series of Homecraft Courses organised by the Women's Gas Council in Cornwall and Devon, new branches of the Council have been formed in several towns. St. Austell was the first Cornish branch to hold its inaugural meeting, arranged by Mr. J. C. Cotterill, Engineer and Manager of the St. Austell Gas Company, although Mr. T. L. Tallentire, Engineer, General Manager and Secretary of the Falmouth Gas Company, had made plans for an opening some weeks previously to coincide with the last lecture of the course at Falmouth. At the final session of a course held at Truro the students decided to form a branch after a lecture on 'Home and the Community,' by Mrs. Buchanan, Secretary of the Women's Gas Council. On this occasion proficiency badges were presented to members of the class by the Mayor of Truro, Councillor W. H. Cornish, J.P. Mr. R. J. Williams, Engineer and Manager of the Truro Gas Company, has now arranged for the election of a committee and the formation of a summer programme for the branch.

GAS BOARD'S OFFICIAL SEAL

The Wales Gas Board, when considering the official seal which the Board is required to have under the provisions of the Gas Act, 1948, decided to invite competitive designs. The Board offered a prize of 20 guineas for the successful design and also a consolation prize of one guinea to those submitting bona fide designs. Entries were received from both staff and students of the Art Department of the University of Wales, Aberystwyth, and the Art Departments of the Technical Colleges of Cardiff, Swansea, Newport, and Wrexham. In all, 21 designs were received.

The Board ultimately decided to award the prize to the entry submitted under the nom-de-plume of 'Starjemar,' who it transpired was Mr. J. C. Tarr, Head of the Art School of the Cardiff Technical College. Mr. Tarr's own description of his design is as follows :—

'The seal takes the form of a circle of enclosing Roman capitals "Bwrdd Nwy Cymru" balancing "Wales Gas Board." Within, on a concave background, in high relief is the head and neck of the Welsh dragon, open-mouthed, with arrow tongue pointing down and conventional flames curling forward and up.'

The design gives equal prominence to the style and title of the Board in both Welsh and English. The Board is highly satisfied with the results of the competition and particularly congratulates Mr. Tarr on submitting so striking and suitable a design for the purpose. The Board feels that the design is one which will be generally approved and now ensures, for the Wales Board, a Common Seal of which it can be justly proud.

TAR DISTILLATION IN SCOTLAND

Speaking to the Scottish Branch of the Petroleum Institute on the coal tar distillation industry, Mr. F. M. Potter, O.B.E., F.R.I.C., General Works Manager of Scottish Tar Distillers, Ltd., said that since 1920 there had been a steady process of grouping within the industry and a growth of co-operative tar schemes, regional in character. About 50% of the crude tar produced by gasworks and coke ovens was covered by these schemes and 25% was distilled by crude tar producers on their own works.

The Scottish Co-operative Tar Scheme distilled two thirds of the tar produced in Scotland. By agreement between the producer and distiller, the distiller provided the working capital and plant, and marketed the products. After charging interest at a fixed rate on the distillers' assets and meeting the working costs, the balance was divided between producer and distiller in agreed proportions, on a sliding scale. Matters of policy were decided by a committee on which the producers had a majority of representatives.

Research on the benzole hydrocarbons was covered by the National Benzole Association, on the use of refined tar in road construction by the British Road Tar Association in co-operation with the D.S.I.R. Road Laboratory, which this year would be opening a branch laboratory at East Kilbride to study especially Scottish conditions, and finally by the Coal Tar Research Association, supported by the D.S.I.R. Some problems had been scheduled for extra-mural research and in this activity the Heriot Watt College, Edinburgh, and the Royal Technical College, Glasgow, were interested.

The value of the primary products of tar distillation exported was approximately £6½ mill., of which nearly half was to hard currency countries. The export of some products was controlled until the basic raw materials requirements of other exporting industries, such as plastics, had been met.

OPENING OF NEW MOTHERWELL OFFICES

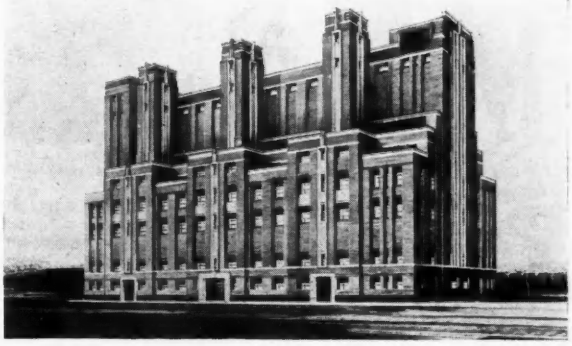
Provost Wilson officially opened the extension to the offices of the Burgh of Motherwell and Wishaw Gas Department in Merry Street, Motherwell, on Mar. 30. The new three-storey building, which was designed by Mr. Clark Fyfe, Burgh Architect, houses an up to date laboratory, and a lecture and demonstration room, capable of seating 100 people, on the top floor, with an administrative suite of offices, including a calorimeter room, a drawing office and typists' room, on the middle floor. Provost Wilson was introduced by Bailie Samuel Rice, Gas Convener, and was presented with a wristlet watch from the contractors as a memento of the occasion. The main speech at a luncheon in the Town Hall was made by Mr. James Anderson, Joint Managing Director of Anderson Boyes & Co., Ltd., who proposed the toast of 'The Town and Trade of Motherwell and Wishaw.' Details of the gas industry were given by Provost David Bonnar, Airdrie, who gave the toast of 'The Gas Industry.' Mr. D. D. Melvin, President of the North British Association of Gas Managers, replied. Mr. Alex McDonald, General Manager of the York, Harrogate and District Group of Gas Companies, who had previously been congratulated by Provost Wilson on his appointment as a full-time member of the North Eastern Gas Board, praised the speed, quality and efficiency of the work in the new building when he proposed a toast to the contractors. Ex-Bailie W. P. Reid, Wishaw, replied.

HOME AND CITIZENSHIP CONFERENCE

The Women's Gas Council's 'Home and Citizenship' Conference will be held at Harrogate from April 26 to April 29. Delegates will be formally welcomed by the Council's President, the Dowager Lady Nunburnholme, on the first evening, and will later attend an informal social arranged by the Harrogate Branch of the Women's Gas Development Association. The President will give her inaugural address to the Conference on April 27, to be followed by Dr. Macalister Brew, who will speak on 'Managing Ourselves,' and a Brains Trust with Mr. Lionel Gamlin as the question-master. On the following day Miss Dorothy Elliott, Chairman of the National Institute of Houseworkers, will speak on 'Home and the Housewife,' and Mrs. M. R. Kettle, Social Studies Department of Leeds University, will open a discussion on 'Can the Family Survive?' The 14th Annual General Meeting will be held in the afternoon, at which the principal speakers will be Mr. Hugh Gaitskell, the Minister of Fuel and Power, Mr. A. E. Sylvester, Chairman of the Gas Council, and Sir Paul Dukes. After an anniversary dinner party, a social will be given by the Women's Gas Council Headquarters. A whole day visit to Leeds will conclude the Conference.

Speakers for the Conference attended a cocktail party in the offices of Mrs. Buchanan, the Council's Organising Secretary, at Gas Industry House, on April 5, to meet the Dowager Lady Nunburnholme, Mr. Hugh Gaitskell, and Mr. A. E. Sylvester. There were also present Mrs. Hugh Gaitskell, Col. H. C. Smith, Deputy Chairman of the Gas Council, Mr. J. R. W. Alexander, General Manager of the British Gas Council, Lady Duckham, Vice-President of the Women's Gas Council, Miss Ellington Wright, Vice-Chairman of the Women's Gas Council, Mr. W. K. Hutchinson, Chairman, South Eastern Area Gas Board, Dr. W. T. K. Braunholtz, Secretary of the Institution of Gas Engineers, and Mr. Leslie Hardern, Public Relations Officer of the Gas Light and Coke Company.

DEVELOPMENT AT WALSALL



An architect's drawing of the retort house which will be part of an extension to the Pleck Gasworks at Walsall. Details of the new works were given in last week's 'Journal.'

. . . and

of course

the famous

MAINSTAT

is a standard

feature on

all models

MAIN 177 GAS

GAS UNDERTAKINGS' RESULTS

Isle of Thanet Gas Light and Coke Company

Final dividend for the year ended Dec. 31 was £6 7s. 6d.% (not 2½% as reported in the *Journal* last week), making £8 17s. 6d.% for the year, not 5% as reported.

Horsham Gas Company

The Directors announce the payment on April 26 of interim dividends for the four months ending April 30 at the following rates: £1 6s. 8d.% on 4% Irredeemable debenture, £1 10s.% on 4½% Preference, £3 6s. 8d.% on 10% Original Ordinary shares, and £2 6s. 8d.% on 7% Additional Ordinary shares.

Dunstable Gas and Water Company.

Final dividends making dividends at standard rates for the year will be paid on the 5% Preference stock, 10% Maximum £1 Ordinary shares, 7% Maximum £1 Ordinary shares, and 5% Maximum £1 Ordinary shares. Profit for the year was £8,186 (last year taxed profit £2,745). After taking credit for provision for War Damage Contribution no longer required £1,090, the carry-forward is £4,887 (last year £4,862). Having regard to the former practice of the Company of providing for income tax on the profits of each year, the provisions of the Gas Act, 1948, and the Finance Act, 1946, make it unnecessary for the Company to provide at Dec. 31, 1948, for income tax out of the profits of the year.

Llanelly Gaslight Company

Profit for the year ended Dec. 31, including balance at credit of profit and loss account, after payment of dividends, &c., is £22,841, compared with £15,575 for the previous year. After payment of 1948 half-yearly dividends there is a sum of £17,453, out of which the Directors recommend the payment of Preference dividends, and dividends on Original shares at £5 15s.%, on New shares, Class A, at £2 17s. 6d.%, on New shares, Class B, at £4 0s. 6d.%, and on New Ordinary shares at £4 0s. 6d.% (making £11 10s.%, £5 15s.%, and £8 1s.% respectively for the year), leaving £12,065 to be carried forward, compared with £6,130 brought in. Sales of gas in 1948 amounted to 304,568,000 cu.ft., compared with 289,110,000 cu.ft. in 1947, and with 129,857,000 cu.ft. in 1940. The price of gas has remained unchanged since July, 1943, when an increase of 1.75d. per therm was applied, and all increased costs have been more than met by increased efficiency and economies in working.

Gloucester Gas Light Company

Results for 1948 how a revenue profit of £41,275 against £29,977 for the previous year. After meeting interest charges and preference dividend and writing off discount on debenture stock there is £40,382 available for ordinary dividend. A final dividend of 2½%, making a total of 5% for the year, leaves £50,543 to be carried forward against £23,623 brought in. Gas sales totalled 1,231 mill. cu.ft., an increase of 5.69% over 1947. For the first six months of the year the price of gas varied from 15½d. per therm to 17½d. per therm according to the area of supply, and was increased by ½d. per therm for the final six months.

COMPANY NEWS

Parkinson and Cowan, Ltd.—The Directors of Parkinson and Cowan, Ltd., are recommending to their shareholders the payment of a dividend of 7%, less tax, on the Ordinary stock for the year ended Dec. 31. Consolidated gross profit of the Group is £299,143, compared with £243,254 for the previous year, and net profit, after providing for debenture service, depreciation, taxation, &c., amounts to £94,186, compared with £83,824 for the previous year.

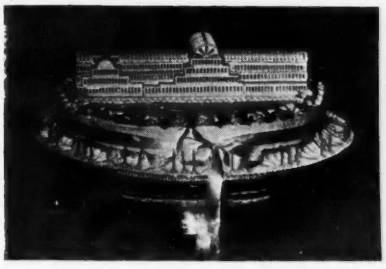
NEW SPORTS GROUND AT FARNHAM

A group taken after the opening on Mar. 30 of the Farnham Gas and Electricity Company's new sports ground and prior to the football match between the Company's team, shown here, and a Brighton and Hove Albion XI. Standing (left to right):

Photograph by courtesy *Farnham Herald* — F.H. 254

Mr. A. E. Whitcher (Director of the Company and of Brighton and Hove Albion), Mr. F. Beckhurst (Football Club Secretary), Mr. R. B. Brown (Deputy Chairman, Southern Electricity Board), Mr. A. R. Prizeman (Sports Club Secretary), Mr. H. Nimmo (Chairman, Southern Electricity Board), Mr. W. H. Emery (General Manager and Secretary of the Company), C. Hammett (goalkeeper), Mr. O. Guard (Chairman, Southern Gas Board), Mr. E. F. Crundwell (Director of the Company and President of the Sports Club), Mr. F. G. Symon (Divisional Manager, Southern Gas Board), and Mr. H. Sanders (Chairman, Farnham Urban Council) who opened the ground and kicked-off for the match. Also present were representatives of neighbouring utility companies, local authorities and football leagues, together with a large number of the town's prominent tradespeople and citizens.

Employees of the South Suburban Gas Company, together with their guests, numbering in all nearly 500, were present at a Dinner and Dance held at the Dorchester Hotel on Mar. 19. The occasion was the renewal of the successful functions which were held annually before the war; this time, however, there was a special significance, as it was to be the last Dinner to be held under the name of the Company. Mr. Tom Brown, the Managing Director, presided and proposed the toast of 'The South Suburban Gas Company, 1853-1949,' to which Mr. B. R. Green, the Deputy Chairman, responded. Unfortunately, the Chairman, Mr. Frank H. Jones, was unable to be present owing to indisposition. In celebration of the Company's 96 years of existence, a giant cake



surmounted by a splendid internally lit model of the Crystal Palace was on show—the Company was previously known as the Crystal Palace & District Company. Later in the evening the cake was cut with due ceremony by Mrs. T. Brown. Many tributes were paid to the workmanship displayed in the model, which was the work of Messrs. Fullers.

GAS STOCKS AND SHARES

Market conditions were quiet in the latter part of the week in anticipation of the Budget, following some activity on April 1 when hopes were raised of tax concessions as a result of the record Budget surplus recorded in the final returns for the year. It is not anticipated that the Budget will give any great stimulus to the market. The repeal of the bonus tax is a major step forward, and, with the extra depreciation allowance, is the outstanding feature of the Budget. Whereas capital industries will profit from these concessions, the absence of any decrease in the purchase tax may hit the consumer industries. Reductions in the food subsidies, and the consequent rise in the cost of living, will also hit entertainments, and probably breweries, in spite of the reduction in the beer duty. There were impressive falls in stores, breweries and cinemas on the first day after the Budget, but the market as a whole did not decline. Total dealings on the London Stock Exchange for the week ended Thursday were 32,866, compared with 31,771 in the previous week. British funds ended the week at an average of 113.79, against 113.74 for the previous week, and the industrial index rose from 114.6 to 115.1.

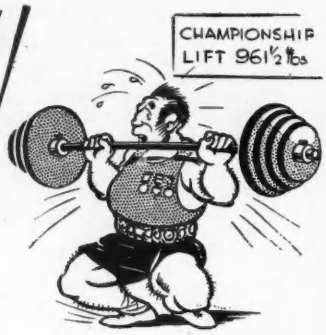
Business declined in the gas stock market, with a total of 196 bargains, the lowest since the week ended Jan. 20, against 230 in the previous week. The week's increases were as follows:

OFFICIAL LIST

East Surrey 'B', 5 p.c. ...	120	—125	+ 3
Gas Light & Coke, ord. ...	23/	— 24/	+ 3d.
Imperial Continental, cap. ..	104	—109	+ 4
M.S. Utility 'A', cons.	102	—107	+ 1
Reading, 5 p.c. max.	100	—105	+ 3

HEY!

LIFT IT BY KING

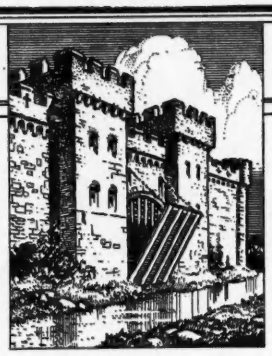


King Electric Chain Pulley Blocks save time and effort and speed up output. This means more production and bigger profits. There is scarcely any process involving lifting and shifting which cannot be greatly helped by a King Electric Pulley Block. Capacities from 5 cwts. to 10 tons all fitted with patent safety limit switches. Write for illustrated booklet on lifting and shifting.

GEO. W. KING LTD.

Makers of Electric Pulley Blocks, Cranes and Conveyors. Write for illustrated booklets.

P. B. G. WORKS · HITCHIN · HERTS.



PROTECTION

GAUNTLET

GAUNTLET

WEATHER TESTED PAINTS

ARCHD H. HAMILTON & CO. LTD
27-37 BARDOWIE STREET POSSILPARK GLASGOW. N

REGISTERED TRADE TOOLDOM MARK

A brush with a Long Life!

Remarkably good value, and their thickness of stock and generous amount of bristle ensures long life. Good delivery and competitive prices for small or large quantities. Send now for particulars and quotations.

NICHOLSON & WEST LTD

3–15A GAOL LANE, HALIFAX, YORKSHIRE.
Telephone 3224 *Telegrams "Tools, Halifax".*

"To produce more for Export"

means more steam . . .

. which does not necessarily mean more coal if efficiently used with Turbine Patent Furnaces. It's worth investigating—let us advise you.

SPECIALISTS IN HAND FIRED FORCED DRAUGHT EQUIPMENT.

TURBINE PATENT FURNACES

The **TURBINE FURNACE CO. LTD.** 238b GRAYS INN ROAD, LONDON, W.C.1. *Telephone* TERMINUS 4365